DOCUMENT RESUME

ED 298 101 SP 030 511

TITLE	The National Women's Leadership Conference on Fitness. Proceedings. (Washington, D.C., April 6-7, 1984).
INSTITUTION	President's Council on Physical Fitness and Sports, Washington, D.C.
PUB DATE	Apr 84
NOTE	79p.; Sponsored by Campbell Soup Co. Photographs may not reproduce clearly.
PUB TYPE	Collected Works - Conference Proceedings (021)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Aerobics; Body Weight; *Exercise; *Females; *Life Style; Motivation; *Nutrition; *Physical Fitness; Preventive Medicine; Womens Athletics

ABSTRACT

The principal addresses at this Women's Leadership Conference on Fitness were: (1) "Keynote Address" (C. Carson Conrad); (2) "Essential Nature of Fitness" (Lawrence E. Lamb); (3) "Effects of Exercise on Women from 20-50 Years Old" (Sharon Plowman); (4) "Fitness in Older Women" (Everett L. Smith); (5) "Female Musculo-Skeletal System" (Robert P. Nirschl); (6) "The Fitness Movement and Eating Disorders in Women" (Kelly D. Brownell); and (7) "Physical Fitness as a Lifestyle" (Guy G. Reiff). A report is given of the activities in the two clinic sessions and demonstrations, and summaries cover the essential points of four papers presented on the second day of the conference. (JD)

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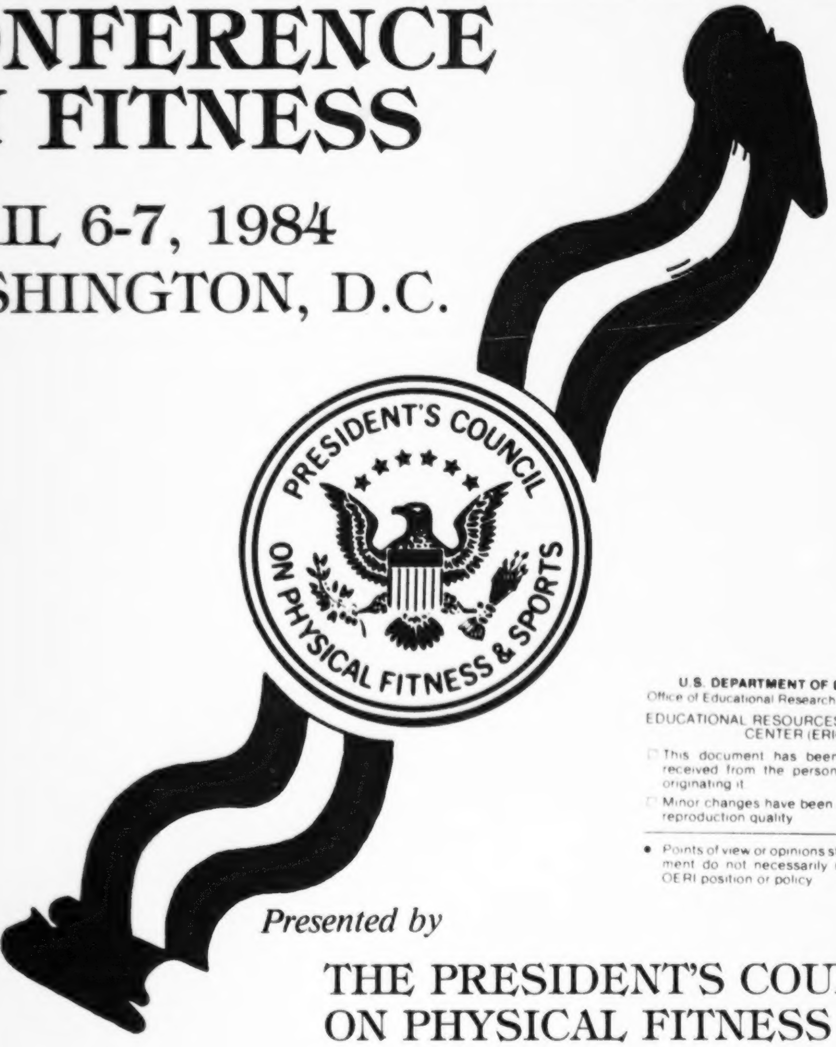
Proceedings

THE NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS

APRIL 6-7, 1984
WASHINGTON, D.C.



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ON PHYSICAL FITNESS
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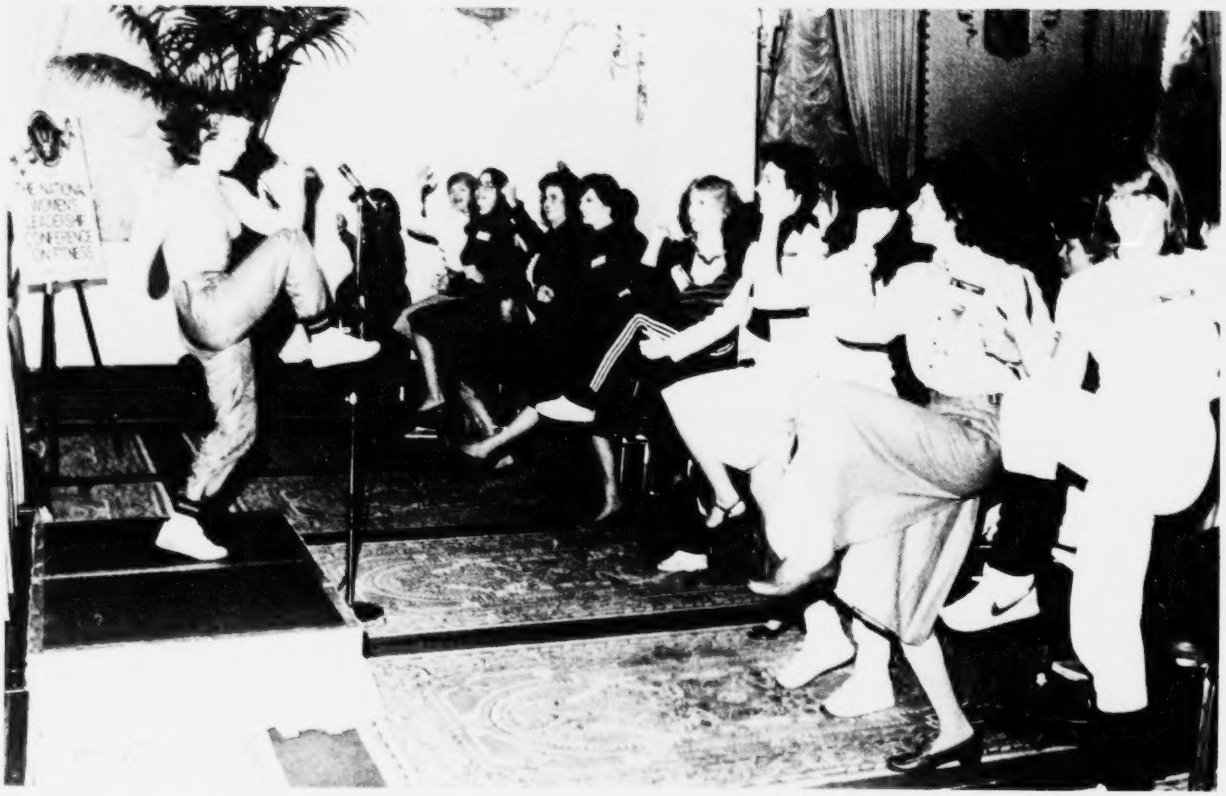
THE NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS

EXIT
THE NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS

THE WHITE HOUSE
WASHINGTON

I am pleased to serve as Honorary Chairman of this first National Women's Leadership Conference on Fitness. Fitness plays an important role in my life, as well as the President's, and we are convinced it is important to the health and vitality of the nation.

Americans are exercising now more than ever. The percentage has doubled in the past 20 years, due in large part to the increasing involvement of women. For many years, women took the role of spectator, but now we make up half of the participants in several of the more popular physical fitness activities.

As women, we have the opportunity to improve fitness practices in our homes, schools, communities and workplaces. This conference is a forum for exploring how that opportunity can be realized. I appreciate your contribution to this effort and offer my best wishes for a pleasant and productive meeting.

Sincerely,

Nancy Reagan

As a football coach, I have had to concern myself with the health, fitness and conditioning of men. As Chairman of the President's Council on Physical Fitness and Sports, I am concerned with the health, fitness and conditioning of all Americans, boys and girls, men and women.

This historic first NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS takes an in-depth look at the special health and fitness concerns of women. Many years ago, women needed to be fit and healthy, faced with the strenuous physical exertion required in their roles as child-bearers, mothers and homemakes.

Today, women are still homemakers and mothers, and many are single parents. But they also are part of the workforce as professionals, executives and managers. They have not changed roles, but considerably expanded the part they play in the life of this country.

Women need to be fit as individuals, but they also need to be in condition for their enormously expanded responsibilities. Greater self-esteem, a better appearance, improved energy and the ability to cope with the stresses of modern living; all require better conditioned women.

The President's Council recently placed improving youth fitness as one of its top priorities. We look to women to set the example, to serve as a powerful motivating force and to help achieve this vital national goal.

George H. Allen
Chairman
The President's Council
on Physical Fitness and Sports

THE NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS has been designed to underscore the important role women can play in improving their own fitness as well as the fitness of others. As the first of these conferences, it takes on a historic significance for which all participants can share a special feeling of pride.

It is gratifying to be able to welcome so many leaders in education, community programs, business, state and Federal government, the military, media and medical associations. Your interest and leadership in health and physical exercise and your support of this conference assures effective changes for better lifestyles in the home, schools and in the workplace.

The conference will demonstrate how existing education and recreation resources might be called upon to provide increased opportunities to promote health and fitness. It also will provide specific skills relating to exercise, good nutrition and other positive lifestyle practices. We also look forward to this conference serving as the springboard for women's leadership conferences to be held soon through out the country on the state level.

We are especially grateful to our sponsor, who has joined with us to demonstrate how private industry can work with government in a cooperative effort. Our warmest thanks to them and to each of you.

Ash E. Hayes, Ed.D.
Executive Director
The President's Council
on Physical Fitness and Sports

Special needs and concerns for women in the related areas of health and fitness have been recognized for years. We at Campbell Soup Company are pleased to have been a part in the development of an action plan to address those needs and concerns through the National Women's Leadership Conference on Fitness, and the series of state conferences that developed as a result.

Only through acknowledging our needs and taking responsibility for making the necessary changes can we contribute significantly to improving attitudes and lifestyles. I congratulate the President's Council on Physical Fitness and Sports and all the cooperating agencies and organizations for recognizing the opportunity to present factual information through the conference and these published proceedings, and issuing a challenge to use the information to make positive changes for our society.

Thank you to all who helped make this experience a success.

Donna R. Ecton
Vice President
Administration
Campbell Soup Company

THE NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS

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THE NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS

FRIDAY, APRIL 6, 1984

6:30 am **Morning Run** *Hotel Entrance*
Carol Tetu—Runhers Unlimited *17th Street*

7:00 **Registration** *The Promenade*

Walk—Liz Elliott *Hotel Entrance*
American Running & *17th Street*
Fitness Association

8 am **Exercise Equipment** *New York Room*
available to conferees

8:00 **Patriotic Music** *State Room*
United States Marine Corps Band

8:30 **Conference Convenes** *State Room*
York Onnen, Presiding
President's Council on Physical Fitness and Sports

Colors Ceremony
United States Marine Corps Band
Armed Forces Color Guard

Invocation
Richard C. Halverson
Chaplain, United States Senate

Welcome
Donna Ecton, Vice President
The Campbell Soup Company

9:00 **Keynote Address—America's Fitness**
C. Carson Conrad, L.H.D., Executive Director
President's Council on Physical Fitness & Sports

9:25 **Physical and Psychological Aspects of Fitness**
Tenley E. Albright, M.D., Moderator
Surgeon, Boston, Massachusetts

The Essential Nature of Fitness
Lawrence E. Lamb, M.D.
Syndicated Medical Columnist

Women and Exercise: Puberty to Menopause
Sharon Plowman, Ph.D.
Northern Illinois University

Women and Exercise: The Later Years
Everett L. Smith, Ph.D., Director
Department of Preventive Medicine
University of Michigan

10:30 **—Exercise and Juice Break—**
Denise Austin

10:45 **The Female Musculo-Skeletal System** *State Room*
Exercise: Why, When and When Not, Where and How
Robert P. Nirschl, M.S., M.D.
Georgetown University School of Medicine

Eating Disorders
Kelly D. Brownell, Ph.D., Associate Professor
Department of Psychiatry
University of Pennsylvania School of Medicine

School-Age Youth and Fitness
Guy G. Reiff, Ph.D., Associate Professor
Department of Physical Education
University of Michigan

12:15 pm **Luncheon** *Ballroom*
Dorothy Hamill, Presiding
Member, President's Council on
Physical Fitness & Sports

Invocation—The Reverend Timothy Dobbins
Rector, St. John's Episcopal Church
Lafayette Square, Washington

Millie Cooper, Speaker
The Aerobic Center, Dallas, Texas

2:30 **Working Women and Fitness** *Ballroom*
Meryl Comer, Moderator
Vice President, Broadcasting—Gray and Company
Washington, D.C.

Panelists:

Tenley E. Albright, M.D.
Surgeon, Boston, Massachusetts
Susan Hurley DeConcini, MSW
Sam M. Fox III, M.D., Director
Preventive Cardiology Program
Georgetown University Medical School
Cory SerVaas, M.D., Editor and Publisher
The Saturday Evening Post
Robert P. Nirschl, M.S., M.D.
Georgetown University School of Medicine
Allan J. Ryan, M.D.
Editor-in-Chief
The Physician and Sportsmedicine

3:30-5:30 pm **CLINIC SESSIONS**
East Room

Introduction to Running
Glenn V. Swengros, PCPFS
Lisa Dobloug, Assisting

Awareness and SelfDefense
SA Livio Beccaccio, Chief
Physical Training Unit, FBI Academy

Exercise Workout
Joan Sullivan, PCPFS Clinician
Portland Oregon Community College

Chinese Room

Fitness Motivation
Patti Holmes
Miami (OHIO) University

Figure & Fitness With Weight Training
Richard O. Keelor, PH.D.
Doris Jean Barrilleaux

Pre and Post Natal Exercises
Karen Blackwell, Coordinator
Arlington, Virginia YMCA

7:00 **Evening Reception** *East Room*

8:00 pm **Demonstrations: HEPsters (Health and Exercise Project)**
George Mason University, Fairfax, Virginia
Deborah DiGilio, M.T.H., Program Director

Fitness Routine with Hand Weights
The Fitness Studio, Washington, D.C.

Jazzercise
Colette de Grassee, Area Manager

THE NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS

SATURDAY, APRIL 7, 1984

6:45- **Celebrity Run Registration at the Ellipse**
7:00 am Starting Time **Celebrity 5K Run** (3.1 miles)
Henley Roughton, Founder, Runhers Unlimited
Shirley Pate, Assisting

Flexercise Workout *New Hampshire Room*
Suzie Timken and **John Thompson**
Canton, Ohio

8 am-
Noon **Exercise Equipment** *New York Room*

8:00 am **Presentation of Papers** *State Room*
John Holland, P.E.D., Presiding
National Defense University

Robert Karch, Ph.D.
Director, National Center for Health/Fitness
American University

Dennis Kowal, Ph.D.
Major, United States Army

Phyllis K. Sharlin
Catholic University

9:00 am **The Turnaround Workshop**
Glenn V. Swengros, Presiding
President's Council on Physical Fitness and Sports

Richard O. Keelor, Ph.D., President
Campbell's Institute for Health and Fitness

Jeannie Crane, R.D.
Consulting Nutritionist

Lauve Metcalfe, M.S.,
Director of Program Development
Campbell's Institute for Health and Fitness

10:15 **Juice Break** *The Promenade*

10:30-
12:00 **Expert Nutrition Panel**

Nutrition Advisory Committee on Fitness
Moderator: **Artemis Simopoulos, M.D.,** Chairman
Nutritional Coordinating Committee
National Institutes of Health

10:30-
12:00 **National Fitness Test**
Initials: A - K *Virginia Room*
L - R *Pennsylvania Room*
S - Z *South Carolina Room*

12:15 pm **Luncheon** *Ballroom*
Invocation: **The Reverend Henry C. Gregory**
Shiloh Baptist Church
Washington, D.C.
Moderator: **Richard O. Keelor, Ph.D.**
Speaker: **Carolyne K. Davis, Ph.D.** , Administrator
Health Care Financing Administration
Special Guest: **Sarah Purcell**
Star of TV Show **Real People**

2:00 **State Representatives Meeting** *East Room*
Moderator: **Glenn V. Swengros,** PCPFS Director
Federal-State Relations
Resources: **Jim Liston,** President
National Association of Governors' Councils
on Physical Fitness and Sports
Lee Dukes
Campbell's Institute for Health and Fitness
Alice Wheaton, Coordinator
National Women's Leadership
Conference on Fitness

NATIONAL WOMEN'S LEADERSHIP
CONFERENCE ON FITNESS

ACKNOWLEDGEMENTS

U.S. Department of Health and Human Services
The National Association of Governors' Councils on Physical Fitness and Sports
American Alliance for Health, Physical Education, Recreation and Dance
Congressional Club
National Association of Girls and Women in Sports
National Recreation and Park Association
Federal Interagency Health and Fitness Council
League of Federal Recreation Associations, Inc.
YMCA of the USA
National Capital YMCA
YWCA of the National Capital Area
American Red Cross
Women's Sports Foundation
American Running and Fitness Association
The Runhers of Washington, DC
Department of Defense, Physical Fitness Committee
Defense Advisory Committee on Women in the Services
Association for Fitness in Business
Association of Health and Fitness Centers
National Defense University
American University
American College of Sports Medicine
National Fitness Foundation
United States Fitness Academy
Universal Gym Equipment, Inc.
Lewis Medical Instruments
Rockville, Md.
FBI Academy, Physical Training Unit
The White House Staff

CONFERENCE STAFF

Alice Wheaton, Coordinator

Carolyn Ruos, Assistant
Wendie Watson, Assistant

Yvoune Adams, Shirley Dyson, Gina Rogers Gould, Joan Grabsch, Juanita Hayes, Sharon Jacobson, Lisa Kanner, Jo McLaughlin, Lacey O'Neal, Lorraine Polk, Tina Reiman, Chris Spain

THE NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS

NATIONAL COMMITTEE

First Lady Nancy Reagan

Honorary Chairman

Mrs. George Allen

Tenley E. Albright, M.D. *President's Council on Physical Fitness and Sports, Special Advisor; Olympic Gold Medalist*

Ruth Alexander, Ed. D., *President's Council on Physical Fitness and Sports, Consultant*

Ann Arledge, *President's Council on Physical Fitness and Sports, Special Advisor*

Margaret Long Arnold, *Coordinator, Women's Activities; American Association of Retired Persons*

John Bates, *Chairman, Virginia Governor's Council on Physical Fitness*

Denise Barrios, *San Jacinto College—South, Texas*

Jess A. Bell, *President's Council on Physical Fitness and Sports, Special Advisor*

Ruth Bender, *Connecticut Governor's Commission on Fitness*

Catherine Black, *President, USA TODAY*

Mrs. John R. Block, *Washington, DC*

Mrs. Terry Branstad, *First Lady of Iowa*

Juanita M. Bryant, *International President, General Federation of Women's Clubs*

The Honorable Beverly B. Byron, *United States House of Representatives*

Honora Carson, *Chairman, Utah Governor's Council on Health and Fitness*

Suzy Chaffee, *President's Council on Physical Fitness and Sports, Special Advisor*

Deena Clark, *Washington, DC*

C. Carson Conrad, L.H.D.

Mrs. Kenneth H. Cooper, *The Aerobics Center Dallas, TX.*

Helen K. Copley, *Chairman of the Corporation and Chief Executive Officer, The Copley Press, Inc.*

Loretta Cornelius, *Deputy Director, Office of Personnel Management*

Beverly Davis, *National Director, Binai B'rith Women*

John H. Davis, *Executive Director, Natioal Recreation and Parks Association*

Susan Hurley DeConcini, MSW, *Arizona*

Donna de Varona, *President, Women's Sports Foundation*

Sharon Dinkel, Ed.D., *University of Montana*

Terry Domanski, *National Capital YMCA, Washington, DC*

Colleen Dwyer, *North Carolina Governor's Council on Physical Fitness and Health*

Marigold Edwards, Ph.D., *President's Council on Physical Fitness and Sports, Consultant*

Wayne K. Edmonds, *Executive Director, Pennsylvania Governor's Council on Physical Fitness and Sports*

Tanya Everett, *President's Council on Physical Fitness and Sports, Consultant*

Rosalyn Fabianke, *President's Council on Physical Fitness and Sports, Consultant*

Lynn Fisher, *President, National Women's Health Awareness Forum*

Mrs. Jane C. Freeman, *National President, Girl Scouts of the United States of America*

Samuel I. Fuenning, M.D., *Co-Chairman, Nebraska Governor's Council on Physical Fitness and Sports*

Ronda Gates, *Oregon Governor's Council on Health, Fitness and Sports*

Mrs. Anna Gear, *President, American Legion Auxiliary*

Dorothy Hamill, *President's Concil on Physical Fitness and Sports, Council Member; Olympic Gold Medalist*

Mrs. Willard V. Harris, *President, Ridgewood Development, California*

The Honorable Margaret M. Heckler, *The Secretary of Health and Human Services*

Mrs. W. G. Hefner, *President, Congressional Club*

Mary B. Hendrick, *Executive Director, Delta Sigma Theta*

Mrs. William Hightower, *AT&T Information Systems*

Mrs. Anne B. Hoover, *President, The Association of Junior Leagues*

Mrs. Craig Hosmer, *Washington, D.C.*

Mrs. John Horton, *South Carolina*

Mrs. Roger Jepsen, *Iowa*

Kay Lani Johnson, *Colorado Governor's Council on Physical Fitness*

Marlene Johnson, *Lieutenant Governor of Minnesota*

Mary Jo Johnson, *President's Council on Physical Fitness and Sports, Special Advisor, Chairman, Oregon Governor's Council on Physical Fitness*

Susan Johnson, Ed.D., *Institute of Aerobic Research, Dallas, TX.*

Richard O. Keelor, Ph.D., *President and CEO, Living Well of America*

Eve F. Kraft, *United States Tennis Association, Inc.*

Mrs. Marianthi Lansdale, *President, Marina Pacifica Oil Company*

Mrs. Diane W. Lawrence, *Director, Rehab Inc.; President, National Health Fitness Systems, Inc.*

Jim Liston, *President, National Association of Governors' Councils on Physical Fitness and Sports*

Cliff Lothery, *YMCA of the USA*

Judy Mahle Lutter, *President, Melpomene Institute for Women's Health Research*

Mrs. Ginger Martin, *Texas*

Bob Mathias, *Executive Director, United States Fitness Academy/National Fitness Foundation*

Lauve L. Metcalfe, *Campbell Soup Company*

Doug Minor, *Executive Director, Mississippi Governor's Council on Physical Fitness and Sports*

Sally C. Nevius, *Mount Vernon College, Washington, DC*

Mrs. Sam Nunn, *Georgia*

Valerie M. Ogden, *Executive Director, YWCA of the National Capital Area*

Lacey O'Neal, *Olympic Athlete*

York E. Onnen, *President's Council on Physical Fitness and Sports*

Mrs. Anne L. Schulze, *Chairman, Defense Advisory Committee on Women in the Services (DACOWITS)*

Cory SerVaas, M.D., *Editor and Publisher, The Saturday Evening Post*

Helen Sherwood, *Regional Administrator—Women's Bureau, Department of Labor*

Dinah Shore, *President's Council on Physical Fitness and Sports, Special Advisor*

Artemis Simopoulos, M.D., *Chairman, Nutrition Coordinating Committee, NIH*

Mrs. William French Smith, *Washington, DC*

Rebecca Stafford, Ph.D., *President, Chatham College*

Kathrine V. Switzer, *Avon Products, Inc.*

Deborah Szekely, *President's Council on Physical Fitness and Sports, Special Advisor*

Agnes M. Taylor, *Maryland Commission on Aging*

Edwyna Testerman, *Southeastern Lousiana University*

Carol Thompson, *Executive Director, National Association of Girls and Women in Sports*

Mrs. Strom Thurmond, *South Carolina*

Susie Timken, *President's Council on Physical Fitness and Sports, Special Advisor*

Mrs. Esther Trevino, *Vice President, Women's League of United Latin American Citizens*

Linda Vanderhoff, *Executive Director, Maryland Commission on Physical Fitness*

Scoot Wood, Ph.D., *Chairman, Iowa Governor's Council on Physical Fitness and Sports*

KEYNOTE ADDRESS

C. Carson Conrad, L.H.D.

C. Carson Conrad was appointed executive director of the President's Council on Physical Fitness and Sports by President Nixon in 1970. He held this position until his retirement in May, 1984. Mr. Conrad has served on the faculty of over 100 regional and 275 state and local fitness and sports clinics and conducted clinics in 7 foreign countries. He holds an honorary Doctor of Humane Letters from Wittenberg University, Springfield, Ohio. He served as the first President of the National Fitness Foundation, and presently lives in Sacramento, California.

Twenty years ago, when the physical fitness movement in the U.S.A. was just beginning to gain momentum, one of the things we did at the President's Council was to develop a large poster for display in schools and clubs. The poster featured a photograph of a young girl exercising, under this caption: "Physical Fitness Is for Girls, Too."

The idea expressed in that message is nearly universally accepted today, although there still are a few people who believe there are both physiological and sociological reasons why members of the so-called "weaker sex" should not engage in strenuous activity. Fortunately, both their numbers and their influence are decreasing.

It seems superfluous today to emphasize the fact that physical fitness is as important for women and girls as it is for men and boys, but in 1961 the idea seemed revolutionary to some in the U.S.A. At that time, only about one of every four American adults participated regularly in exercise and sport, and the vast majority of those were boys and young men. The relatively few females who did take part were concentrated mostly in a few activities considered appropriate for them, such as tennis, swimming, and gymnastics.

There are many weeks when the President's Council on Physical Fitness and Sports (PCPFS) receives more than 3,000 letters seeking various kinds of information. Approximately a third of the letters come from fitness professionals—physical educators, physiologists, physicians, recreation specialists, coaches and others. Of the remaining two-thirds of the mail, well over half comes from women. The fact is, we get more letters from women than we do from men and boys and girls combined.

Women write about every conceivable aspect of physical fitness, but three concerns are voiced repeatedly in their letters.

Many of the women who write are concerned about their condition or appearance and are seeking information on how they can lose weight and get back in shape. This is especially true of women in their 30s and 40s.

If the women who write are married, they often are worried that their husbands are eating and sitting their way into early heart attacks. They usually are looking for ways to get them out from in front of the TV set and into exercise programs.

If the women who write also are mothers, there is a strong likelihood that they will express two additional concerns: one, how they can get their children involved in physical fitness activities, and two, what they can do to help improve their school physical education programs.

The fact that women write to us in large numbers and voice a wide range of concerns is only one of the reasons why I'm convinced that they already are a major force for fitness and will play leading roles in the years ahead. Here are some of the other factors that helped lead me to that conclusion:

- Women traditionally have been more health-conscious than men and are more likely to respond in a positive way to our growing knowledge about the importance of regular exercise and good nutrition.
- Women usually are the dominant influence in determining what and how much families eat, and they also have a strong voice in deciding how leisure time is used.
- Women are more likely than men to take an active interest in the schools and to attend meetings of parent-teacher groups.
- Women now outnumber men in a few popular sports, and some recent surveys indicate that there actually may be more women than men who participate in some form of exercise on a regular basis.

You have to look at that last fact from the perspective of my generation to fully appreciate the dramatic nature of the change it represents. I can recall a time when women were expected to perspire only during childbirth. If they took part in sports at all, it was likely to be in something such as tennis in which they still could dress and look like ladies. Certainly no one at that time foresaw a day when women would be working with weights and running marathons.

But, I'm getting away from my basic message, which is that women, and especially women like those of you in the audience today, are in a position to help improve the physical fitness of all Americans. The main purpose of this conference is to explore ways in which we can capitalize on that opportunity.

In addressing the physical fitness problem, the President's Council concentrates most of its efforts and resources on four fronts—the home, the schools, the community and the workplace. If we can win the battle in these arenas, we will be reaching virtually every member of the population.

To this point, we have made gains on three of the fronts and taken some casualties on the fourth—the schools.

Most people don't recognize the extent to which what is now called "the physical fitness boom" as an adult phenomenon. Since 1960 the percentage of adults who participate in some form of exercise or sport has increased from 24% to around 50%. At the same time, the quality of adult participation has improved dramatically. Men and women who once considered the traditional "daily dozen" a tough workout now run several miles a day and work with weights.

Unfortunately, we have not made the same kind of progress in youth fitness. As a matter of fact, school-age boys and girls have not improved their physical fitness test scores in nearly 20 years. One of the reasons is that many school systems have reduced or eliminated their physical education requirements.

Another is that more and more young people are attending large urban schools where financial problems tend to be most severe. Finally, we still are recovering from that time in the late 1960s and early 1970s when it was the fashion to let students design their own curriculums.

While we're on the subject of youth fitness test scores, here is one fact that should be of special interest to women: Girls make their best scores on physical fitness tests at around 13 years of age and then level off or even go into a decline. There are some physiological factors at work here, but the low scores by older girls also reflect social attitudes. Despite all the changes that have occurred, there still are many girls who regard vigorous physical activity as the province of men and boys.

There are problems in other areas as well, and I will mention only a few of them today:

- When we say that half of all men and women participate in some form of exercise and sport, that means the other half do not get *any* exercise beyond that absolutely required of them in their daily routines. The problem is most pronounced among the elderly and the least-educated and least affluent members of society.
- The vast majority of employers still do not provide facilities, leadership, time or even encouragement for employee fitness programs.
- Many recreation departments still confuse recreation with relaxation and offer little in the way of organized exercise classes or sports instruction and competition.

These are some of the problems that must be solved if we are to make significant and lasting gains. As I have said, I believe women are uniquely qualified and positioned to help bring about needed changes. If I may, I would like to offer a few specific suggestions about the best way to proceed.

The right place to begin is by making certain that you are physically fit yourself. Obviously, if each of us were to accept responsibility for our own condition, there wouldn't be a physical fitness problem. Also, it is difficult, and perhaps impossible, for an unfit person to make a convincing case for fitness. People are getting more sophisticated, and they no longer will accept the injunction to "do as I say, not as I do."

If you have a family, your next step should be to assure that exercise is a part of the daily routine and that a reasonable share of leisure time is devoted to active sports that the family members enjoy.

If you have children, make it a point to know what kind of physical education program they're getting at school. If it isn't a program that emphasizes physical fitness and lifetime sports skills, enlist your friends and neighbors in an effort to get the school board and school administrators to make needed changes.

If you're employed and your employer doesn't provide an employee fitness program, talk to your fellow employees, supervisors and managers about how to get one started.

Finally, make certain that your recreation department has programs that serve the needs and interests of people of *all* ages and check to see that some of them are fitness programs.

You probably will think of many other ideas. The point is, you can help make a difference.

Before I close, I want to acknowledge the fact that there still are a lot of people who question the need for physical fitness. The question they ask usually is put like this: "Fit for what?"

There are several ways to answer that, but if you ask the fitness authorities, most of them will give one of two answers. Some will say that you should be physically fit so that you will live longer. The others will contend that the primary justification is a better quality of life. I lean toward the latter school of thought, but I'm hoping I won't have to make a choice.

And that brings me to several other points. In our recent concern for improving health and longevity, we frequently have emphasized aerobic exercise almost to the exclusion of everything else. By that I mean that we have neglected muscular fitness and flexibility, and we have done so to our detriment.

At the President's Council, we believe strongly in balanced fitness programs. Aerobic fitness will help you stay alive, but it takes strength and flexibility to really live. So, if you're interested in something more than survival, you had better include some strength and flexibility work in your program.

Aerobic fitness, or cardio-respiratory endurance, is what enables your body to manufacture energy. It takes strength to apply that energy, and it takes flexibility to use it efficiently.

The other point relates to weight control. We all know that fat is a health problem but do you know that underweight can also be a health problem.

In our quest for fitness so many of our girls, young and middle age women, have forgotten that good nutrition is essential for energy and for building and repairing the body. Young girls in particular need greater quantities of appropriate food intake balanced with regular exercise.

I'm looking forward to meeting many of you here, and I hope you will find this conference a useful and enjoyable experience.

Thank you and good day!

THE ESSENTIAL NATURE OF FITNESS

Lawrence E. Lamb, M.D.

As a cardiologist from San Antonio, Texas, Dr. Lawrence E. Lamb writes the most widely read health and medical column in the United States and Canada today and is the author of numerous books and scientific articles including, *Your Heart and How to Live With It.* Dr. Lamb designed and conducted the medical examinations used in the selection of all astronauts who have been to the moon. Dr. Lamb is a medical consultant to the President's Council on Physical Fitness and Sports and has served as a keynote speaker for physical fitness and sports clinics throughout the country.

I am particularly pleased to address the first National Women's Leadership Conference on Fitness. As a syndicated columnist for a health and medical column I know that women are leading the national effort toward improved health and fitness. I receive about 400,000 letters a year from readers from all over the United States. A high percentage of these letters are from women, concerned about better health for themselves, their children, their husband or other loved ones. It is the woman who makes the home a place of health. Usually she determines the level of nutrition, which has a major impact on health and fitness. She also influences, by her attitude and encouragement, the level of fitness for all, and that includes various habits that affect health and fitness. Today's woman knows that lifestyle is a major factor in the quality of life as well as its duration.

Through the past 100 years the medical and health problems have undergone tremendous changes. The leading cause of death and disability today is atherosclerosis, the fatty-cholesterol deposits that block arteries in the body. The complications of this disease are heart attacks and strokes that still account for half of all deaths in the United States. Heart attacks in living people were essentially unknown before 1900. The rare cases were noted only after death. Beginning in the 1920s the disease began to increase, and finally in the late 1950s it reached epidemic proportions, cutting short the life of many vigorous young men in their prime. Women are far less likely to have heart attacks than men until after the menopause. By age 65 the rate is the same for both men and women.

You can see the difference in how artery disease affects our population by looking at the lives of our early presidents compared to those beginning with Woodrow Wilson in World War I. The seven presidents from Adams through Van Buren lived an average of 81 years. Those were vigorous years and none had heart attacks. But from Wilson through Johnson (excluding Kennedy because of the assassination), six out of eight died of heart attacks or strokes. The two exceptions were Truman, who might be considered to have died of old age although the final event was circulatory, and Hoover who died of cancer. Moreover, four (50%) of these presidents had disability or died in office from the atherosclerosis.

Why was there such a difference between our first presidents and the more recent ones? The answer is lifestyle. The early presidents did not have automobiles, radios, television, telephones, refrigerators or cigarettes. They were physically more active. Jefferson was a great walker as were others. They did not smoke cigarettes, and because there was no refrigeration they ate a diet that contained much less fat and fewer calories than was common at the peak of the heart attack epidemic.

Put plainly, by following an unhealthy lifestyle the population has nearly wiped out the advantages of all the really marvelous achievements of modern medicine. Antibiotics changed the dangers of infectious diseases. The three leading causes of death in 1900 were tuberculosis, pneumonia and diarrhea (enteritis). All three of these major killers have been tamed by modern science. Typhoid epidemics are no longer the scourge of the land. Most tuberculosis sanitoriums have been closed and while pneumonia is still with us it is not the scourge it once was. Today's three leading causes of death are heart attacks, strokes and cancer.

Even cancer is often caused by lifestyle. Lung cancer is by far the leading cause of cancer deaths in men and is vying with breast cancer for first place in women today. It used to be a very rare disease. Why is it so common today? Because of cigarettes. A young man who smokes two packs of cigarettes a day will shorten his life expectancy by 14 years. Similar problems occur in women and the increase in lung cancer in women, as well as heart attacks, is a direct effect of smoking. Smoking also decreases a person's physical capacity or level of fitness. It has far reaching effects on a person's health. Fortunately, when people get interested in health and fitness and start exercising they often quit smoking.

The three major factors that you can do something about that cause heart attacks are cigarette smoking, high blood pressure and a high cholesterol level. Today we know that you need to study the size of the fatty-cholesterol particles (lipoproteins). The smaller particles (HDL) help protect against the deposit of fatty-cholesterol into the walls of the arteries. The larger particles (LDL) are the dangerous ones. Of course inherited characteristics are quite important. But if a person inherits a perdisposition to fatty-cholesterol changes he needs to be that much more careful about his lifestyle.

Diet, exercise and weight control are all important in controlling your cholesterol and your blood pressure. Being overweight contributes to high blood pressure in many people. The truth is that the lower your blood pressure is the less likely you are to have fatty-cholesterol deposits in the arteries. That is why these deposits are seldom noted in the arteries to the lungs. The blood pressure in these arteries is quite low (normal is less than 40) compared to the pressures in the arteries to the rest of your body. Good studies have been done and repeatedly confirmed that if your pressure is high normal or actually abnormal that you may be able to reduce it to normal or low normal levels by eliminating excess pounds of body fat.

It is undesirable to live in a semi-starvation state or follow fad diets, but if you stay on the lean side you are less likely to have high blood pressure or high cholesterol. The proper diet for this is one that limits the calories in proportion to your level of activity to help you maintain proper body weight. I might add that reports of increased deaths in people who were thin is largely because these thin people were also cigarette smokers, which confounded the results.

Exercise programs that use calories help people to stay lean. A less well recognized aspect of exercise that helps in this regard is its ability to reset the body's thermostat. Most of the calories that your body eliminates are eliminated as heat. All the calories your body eliminates at rest are lost as heat and 75 percent of those calories lost from exertion are also from heat. Less than 25 percent of the calories used during physical exertion are from the mechanical effort itself. If you limit your evaluation of exercise to the mechanical energy effects, you lose sight of its much greater benefits.

Many women develop a middle-aged spread because their thermostat is set lower. Since fewer calories are used to maintain body temperature, more are available to be stored as fat, unless you severly decrease your caloric intake. But even light frequent exercise throughout the day helps to raise that thermostat and offset this change. We need to learn a lot more about the thermostat setting and how it affects energy but at present we do know that exercise is a key factor.

In addition to limiting calories it is important to limit the intake of all fat to less than 30 percent of the total calorie intake. The saturated fat should be limited to less than 10 percent of the total calorie intake. Also the cholesterol should be limited to less than 300mg a day. These are general guide lines. When you deal with an individual you change his or her lifestyle the amount necessary to achieve the desired effects. The rule is indivdualize don't generalize. If simply reducing calories controls the blood pressure and cholesterol level that is fine. If not, then you may need to restrict the fat, saturated fat and cholesterol to even lower levels than the general recommendation calls for.

Maintaining your muscle mass is also important. As a general figure the muscles in the body are about 40 percent of the body weight and at rest use about 40 percent of the calories. Fat uses very few calories. The more of your body that is muscle versus fat the more calories your body will process and eliminate even at rest. A 120-pound woman, who is physically fit and muscular, will use far more calories sitting still than a comparable 120-pound woman who has little muscle mass and more body fat. In that situation, if they both ate the same diet, the fat one may get fatter and the muscular one may not.

In the past, as women reached middle age they became less and less active. They did little strength exercise. A muscle that is not worked against resistance tends to get small and is only as large as it need be. To help with the muscle mass part of staying fit a good program should include strength exercises. Even calisthenics are strength exercises and the weight is the body itself.

Endurance exercises, which help you use calories, develop your heart and lungs and also affect the circulation in the muscular parts of your body, are essential to fitness and health. They must be done properly and not overdone. Strength exercises are important in maintaining good muscle size, which also helps with posture. The third area of importance is flexibility. The ability of a muscle to stretch is not the muscle fiber itself but the elastic and fibrous tissue in the muscle, around the muscle fibers, that extend to ligaments and tendons. These shorten if they are not stretched regularly. They stretch best when they are warm. And the most effective stretch is a slow stretch that holds the stretched position for at least 30 seconds. Rapid bobbing motions don't help much. Stretching is important at all ages. As you get older it gets more important. You need to establish a daily routine to be able to stretch your muscles in your whole body through their whole range of motion. The pleasure of the added flexibility this affords you is sufficient reward in itself.

I would like to mention in addition to diet, exercise and avoiding cigarettes that other aspects of lifestyle are also important. Caffeine promotes anxiety. It stimulates or increases the sensitivity of the body to adrenaline, the fight or flight hormone. This stress hormone is released in increased amounts in anxiety. It raises the blood pressure, causes the trembling and shaking hand, the sweating and many other symptoms of anxiety. Certainly caffeine should be used in moderation. That means limiting or avoiding coffee, tea, caffeine containing colas and other sources of caffeine. Those who need to take medicines to neutralize adrenaline for reasons of high blood pressure, irregular heart beats or angina heart pain should not use caffeine at all. It simply decreases the effectiveness of your medicine.

Alcohol needs to be mentioned. About 60 percent of all deaths from cirrhosis of the liver are alcohol related. Cirrhosis of the liver is the fifth most common cause of death in women between the ages of 35 and 54. Alcohol has been touted as preventing fatty-cholesterol deposits in arteries. The magic number is said to be two or less drinks a day. Many in such studies were well below the two a day suggestion. But alcohol does not have the same effects as exercise. It may increase a fraction of small fatty cholesterol particles (HDL), however, it is a fraction increased with physical exercise. You cannot expect to get the same results from a cocktail a day as you can get from sensible exercise.

Time prevents me from mentioning all the benefits from fitness. Certainly the proper use of exercise and diet to help prevent bone loss (osteoporosis) is quite important, and particularly important to women. Much of the bone loss that develops near and immediately after the menopause can be prevented. Diet and exercise both play key roles in this. You will hear more about this from subsequent speakers.

I would just like to summarize by emphasizing that everyone needs a good fitness program which includes exercises for endurance, strength and flexibility. Everyone needs good habits in terms of diet, not smoking, and avoiding alcohol and caffeine. By following a proper lifestyle you can improve both the quality and duration of your life. May I wish for each of you leaders in this important movement that you may live as long as you want to, and want to as long as you live.

EFFECTS OF EXERCISE ON WOMEN FROM 20-50 YEARS OLD

Sharon Plowman, Ph.D.

Dr. Sharon Plowman received her Ph.D. from the University of Illinois—Urbana Champaign. She has served on the board of trustees of the American College of Sportsmedicine and as chairman of the Exercise Physiology Academy of the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD). She is a fellow of the American College of Sports Medicine and president-elect of the Physical Fitness Council for AAHPERD. Dr. Plowman teaches at Northern Illinois University.

In looking at the female and exercise from ages 20 through 50 it is important to consider some of the ways in which aging may be defined.

1. From a chronological standpoint, age is simply the passage of time—twelve months go by and we are a year older.
2. Common useage puts aging in the context of a gradual loss of the organism's ability to respond to the environment. This definition, however, looks at only one end of the spectrum—the declining end.
3. In its broadest sense physiological aging is the constant *change* in physical powers and capacities which occur throughout life. This is generally seen as an improvement to about age 17, a plateau until approximately 26-30, and then a gradual decline. Of course, much individual variation occurs, and it is important to realize that chronological age can be vastly different from physiological age.

No one knows precisely why our physiological functions decline as we pass through adulthood. It is speculated that much of what we call aging may actually be the result of disease and/or detraining. For example, physiological changes which take place as a result of aging and cardiovascular disease such as a decline in max VO_2, stroke volume, respiratory efficiency, endurance and pulse rate recovery are identical.(4) What is more important is that a third comparison could be added showing that detraining results in similar changes. Thus it may be that part of what we call aging (perhaps as much as 50%) is actually a correlate of a sedentary lifestyle rather than just some inherent biological clock incessantly ticking away.

Several years ago I conducted a study entitled "Age and Aerobic Power in Women: a Longitudinal Study" with Dr. Barbara Drinkwater. One purpose of the research was to determine the influence of an active vs. sedentary lifestyle on aging trends.

Thirty-six subjects from an earlier cross sectional study done by Drinkwater were contacted and agreed to serve as subjects again. The subjects ranged in age from 18 to 68 at T_1 (the original cross sectional testing) and 21 to 73 years at T_2 (the longitudinal testing). Among the physical tests which they participated in were hydrostatic weighing for the determination of percent body fat, and a modified Balke Treadmill test for the determination of max VO_2.

Figure 1 shows the longitudinal decrement in max VO_2 ($ml \cdot kg \cdot mi^{-1}$) in relation to the means, 95% confidence intervals, and line of best fit from the cross sectional data in the graph. With the exception of the youngest, all the other age groups decreased in aerobic power from T_1 to T_2. The mean rate of decline for the subjects at T_2 was -0.323 $ml \cdot kg \cdot yr^{-1}$ as compared with -0.291 $ml \cdot kg \cdot yr^{-1}$ for the cross sectional population. The most startling result was apparent, however, when the subjects were divided according to fitness level.

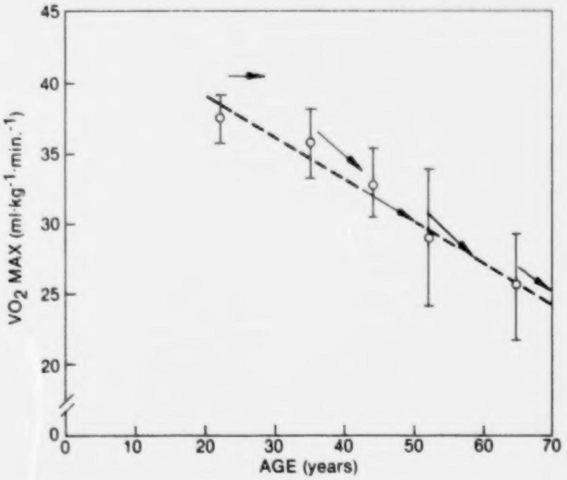
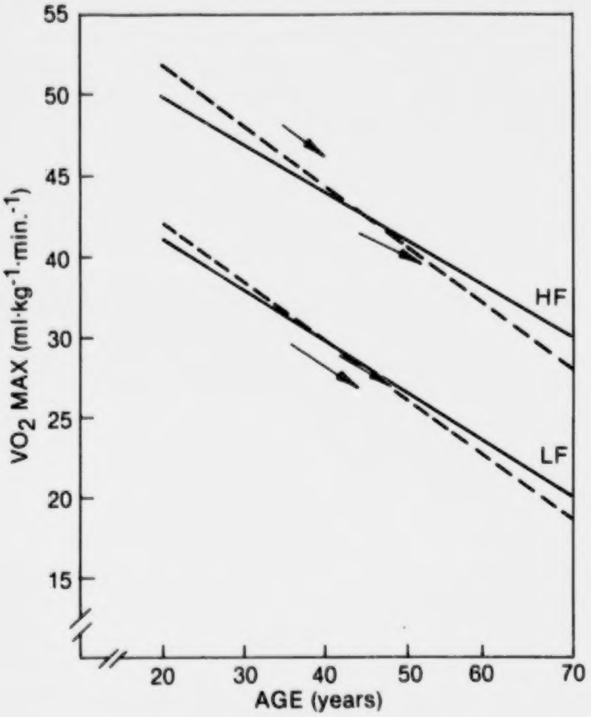


Figure 2 shows the changes in max VO_2 $ml \cdot kg \cdot min^{-1}$ for active (HF) and sedentary (LF) groups cross sectionally at T_1 (solid lines) and T_2 (Dotted lines). The arrows represent the longitudinal subject changes. Between the approximate ages of 30 and 50, the HF subjects averaged 10.2 $ml \cdot kg \cdot min^{-1}$ higher than the low fit subjects. The average active 45 year old possessed a max VO_2 value equal to that of the average sedentary 20 year old!

Despite the higher values for max VO_2 in the HF individuals at all ages, the relative rate of decline appears to be identical. No significant difference exists in the slopes of the regression lines between the HF and LF individuals either at T_1 or T_2, suggesting that while activity will maintain higher aerobic power levels, the deterioration brought about by aging is caused, at least in part, by some other inevitable mechanism. This may be linked with the increasing amount of body fat and the concomitant loss of muscle mass with age.

The women in the study between the ages of 30 and 73 on the whole did increase their percent body fat as has been shown to occur in both males and females with age.

Women in the LF group weighed more than those in the HF group at both T_1 and T_2. Percent body fat was similar for the two groups at T_1, but by T_2 the low fit subjects had increased significantly to 33.3% and had a higher percent body fat than the HF group (25.2%).



These changes—a higher max VO_2 and a lower % body fat are typical of what one would expect of an active, fit individual without regard to gender. Males and females are both qualitatively trainable, albeit some quantitative differences do exist.(5)

These changes also represent just the tip of the physiological iceberg. Other cardiovascular-respiratory benefits include:

1. A lower heart rate at rest and during submaximal exercise
2. An increased stroke volume at rest, during submaximal and maximal exercise.
3. Increased capillarization and mitochondria
4. Increased blood volume and hemoglobin levels
5. A decrease in lactic acid accumulation during submaximal work, but the ability to tolerate greater lactic acid build-up at maximal work
6. An increase in pulmonary ventilation and ventilatory efficiency
7. Decreased blood pressure during rest and exercise
8. Hypertrophy of cardiac cavities
9. An increased breaking strength of bone, ligaments, and tendons(2).

Females, however, do not tend to experience the high levels of muscular hypertrophy exhibited by males in response to weight training. Since muscular development is linked with plasma testosterone levels, males are capable of greater gains in muscle bulk than women. Nevertheless, females substantially increase in strength when placed on a progressive resistance weight training program.(5)

Perhaps the best part of this is that anyone at any age can achieve these training benefits. We each have genetically imposed limitations and an older individual may not improve as much as a younger one, but age does not negate improvement potential.

Furthermore, these changes impact not only upon the rate of deterioration in physical vigor, but also upon the health (i.e., absence of disease) of the individual as he/she ages.

The role of the sedentary lifestyle in the risk for cardiovascular disease has been much discussed. The role of exercise in the fight against obesity goes beyond mere aesthetics to a linkage with hypertension, atherosclerosis, and diabetes mellitus. The exercise induced bond density becomes extremely important in the prevention of osteoporesis.(4)

Exercise training is no fountain of youth and no panacea for these ills or others, but it does exert a positive preventative influence.

To commit to an exercise program just because it is good for your health should not overshadow the fact that exercising can and should be fun. That it is the quality and joy of life probably more than the length of life that matters.

In an inflationary world the cost is really quite minimal and stable. The American College of Sports Medicine Guidelines(1) include recommendations for the frequency, intensity and duration of activity for training for cardiovascular and body composition changes that are applicable to adults of both sexes:

1. Select an aerobic activity that you like
2. Participate regularly—3-5 days/week
3. Start slowly and select an appropriate intensity—approximately 60% heart rate reserve to begin.
4. Work 15-16 min per session.

Remember:

Fitness for Life is the Goal
The Key to Achieving this is Participation
Few people will participate if the activity is not FUN
If we do participate we will benefit—no matter how fast or slow we move. WE WILL ALL BE WINNERS!

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FITNESS IN OLDER WOMEN

Everett L. Smith, Ph.D.

Dr. Everett L. Smith is the director of the Biogerontology Laboratory in the department of preventive medicine at the University of Wisconsin, Madison. He is well known for his research on aging and physical fitness. Dr. Smith has received grants from the National Institute on Aging to study the role of exercise in the development of osteoporosis. Dr. Smith is a fellow of the American College of Sports Medicine.

Aging may be defined as a chronological or physiological process. While chronology is useful in determining general trends, physiological function is far more indicative of the individual's abilities and liabilities. Physiological aging may be defined as a decreasing ability to adapt to one's environment, irrespective of chronological age. Other aspects of life that may contribute to aging in this sense are economic, social and psychological factors.

While the aging process may be considered to begin at birth, for our purposes its manifestations are not expressed physiologically (loss of adaptability) until about age 35, when peak function is most often observed. After this age, the average woman loses about .75-1%/year of physiological function. Only half of this decline, however, can be attributed solely to the passage of time and the genetic program of humans. Interaction with the environment plays an important role in physiological aging. In particular, there is a continuous general pattern of decreasing activity in the average aging female that leads to disuse atrophy. By maintaining a consistent exercise program, aging women can avoid many of the functional declines associated with age but attributable in part to disuse atrophy, which leads to disabilities.

Work capacity, muscular strength, flexibility and bone, all of which are critical in preserving quality of life, are dependent to a great extent on the level of physical activity.

Muscular strength declines 20-30% between the ages of 30 and 70 in the average sedentary population. Losses in muscle mass result in a decreased lean body mass, paralleled by a decrease of 8-12% in metabolic rate. Decreased basal metabolism results in a lower energy expenditure and often an increase in fat accumulation. Petrofsky and Lind[2] found no decline in hand grip strength with age in men between 22 and 65 performing similar work activities in an aircraft corporation machine shop. While functional muscular decline may be averted, it is not certain that muscle hypertrophy can take place beyond about the age of 60. Moritani found that young participants in an isotonic strength training program had increased in both neural activity and muscle mass, while the aged subjects increased in neural function only.[3]

Flexibility declines by 20-30% between 30 and 70. Chapman et al.[4] and Lesser[5] both showed increases in flexibility in aged subjects with exercise. In our laboratory, Munns measured the neck, shoulder, wrist, hip/back, knee and ankle in forty subjects aged 65-88. Twenty subjects participated in an exercise program three days/week for 12 weeks, and 20 subjects served as controls. Significant improvements were found at all sites in the exercise group, and a slight decline noted in the control group.[6]

Bone mass in women declines 1-2%/year after age 35, with a 2.5-5% loss per year in the first 4-5 years after menopause (whether natural or surgical).[7] Continuous loss of bone at a high rate results in osteoporosis (porous bone), and a bone susceptible to fracture. Osteoporosis affects as many as 20 million people in the U.S., and may be associated with approximately 1.3 million fractures, at a cost of $3.8 billion, annually. Inactivity, inadequate calcium intake and/or absorption, and hormone changes are believed to be the three major factors implicated in this loss.

There is abundant evidence in the literature that the decreased estrogen level in the blood of the postmenopausal woman is an important factor in increased bone mineral loss. While menopause is universal, the need for estrogen replacement therapy should be judged on an individual basis. Calcium intake, however, should be at the level of 1200 mg/day for premenopausal and 1500 mg/day for postmenopausal women, with 200 to 400 IU/day of Vitamin D.

Bone mineral mass is also maintained by the forces acting on the bone. Bone has two principal forces acting on it: gravity (weightbearing) and muscular contraction. If either of these forces or both are reduced bone loss will occur. Inactivity leads to bone loss. Researchers have demonstrated that individuals placed at bedrest will lose approximately 1%/week of their bone, in both the spine[8] and heel.[9] Bone is also lost from astronauts in space where the forces of gravity and muscular contraction are severly lessened.[10] The general decrease in physical activity with age may account for some of the bone loss observed.

Patterns of physical activity play a major role in bone maintenance and hypertrophy regardless of age. We found that senior tennis players (mean age 64) had significantly greater bone mineral of the radius and humerus on the dominant arm.[11] Various other studies of tennis and baseball players confirm the bone hypertrophy fround in the playing arm with unilateral sports.[12,13]

Athletes in general demonstrate greater bone mineral content than the sedentary population, with the degree of hypertrophy depending on the sport; activities which require greater weightbearing produce greater bone hypertrophy in the bones stressed.[14,15] A recent study of intercollegiate female swimmers and tennis players points out benefits of both physical activity in general and the importance of weightbearing activities. Both tennis players and swimmers had greater bone mineral content of the radius and metatarsals than controls, but only the tennis players had a greater lumbar spine density. In another part of this same report, athletic middle-aged women (35-64 years old, exercising at least 1 hour/day, 3 days/week) also showed greater lumbar spine density than sedentary women of the same age.[16] In a study of premenopausal women (aged 30-49), marathon runners were found to have greater bone mineral content in the midshaft radius and the phalanx than the controls, while the controls had greater bone mineral in the os calcis. In addition, bone mineral of all three sites increased with age in the marathon runners, while decreasing nonsignificantly in the controls.[17]

Numerous studies have reported on the effects of acute or chronic exercise programs on fitness in older men. Relatively few, however, have concentrated on the older woman. In one 7-week exercise intervention program, women 37-48 years old increased fitness by 13% and women 51-64 years old increased by 9%.[18] Eleven women in another study (mean age 32.6) improved their fitness by approximately 20% in a 20 week study.[19] Cross-sectional studies have reported average values of VO_2 max ($ml\cdot kg\cdot min^{-1}$) of between 27.9 and 37 for 30-39 year olds and between 24.4 and 29 for 50-59 year olds.[20-22] A longitudinal study found a decrease of -0.323 $ml\cdot kg\cdot mi^{-1}$ per year on VO_2 max.[23]

We studied the effects of physical activity on a group of 120 sedentary women 25-65 years of age (mean age 50). Resultant changes in both cardiovascular fitness and bone mineral content were studied. The exercise program was 3 days/week, 45 minutes/day, 50 weeks/year. The activity consisted of a 10 minute warm-up of stretching and strength exercises, 30 minutes of aerobic conditioning at 70-80% of the individual's heartrate reserve, and five minutes of cooldown. A 62 subject control group was also studied.

Of the original group, 102 women completed the first year of the study. The physical fitness of these subjects was measured by a progressive volitional maximal treadmill test. The maximal VO_2 ($ml\cdot kg\cdot min^{-1}$) on this test improved by 16%. The improvement of the subjects was independent of age.[24]

The improvement in physical fitness during the first year of the study was not matched by increases in bone mineral mass of the arms. On the contrary, we found that declines in bone mass were greater for the exercise group the first year than for the control group of similar age (mean age 51) and similar fitness at the beginning of the study. Bone mineral content of the left radius declined by 2.44%/year in the control group, while the exercise group lost 3.77% the first year. Increased emphasis on upper body development was included in the exercise program the second year. This included pushups, the use of rubber tubing, light weights (3.3 lbs) and arm bands (1.1 to 1.65 lbs).

A total of 82 sujbects completed three years of the exercise programming. In the last two years, a reversal of the first year bone decline was observed. Bone mineral increased by 1.39% in the left radius, with similar improvements in the ulna and humerus.[25] Maximal VO_2 ($ml\cdot kg\cdot min^{-1}$) increased only slightly over that of the first year, with an overall increase of 19%. This contrasts with about a 3-5% decline in fitness of the control group.

In another study, we used a fitness trail approach for older adults. The fitness trail consisted of a route one mile long with stations each quarter mile where exercises for strength and flexibility were done. At the end of the three month study, the exercise group (n = 17, mean age 70.8) had increased their maximal VO_2 ($ml\cdot kg\cdot min^{-1}$) by 32%, and the control group (n = 10, mean age 69.5) had increased by 27%. While these increases were not significantly different from each other, they were significantly higher than the changes in the test-retest group who repeated the work capacity test after three weeks. It is hypothesized that the increase in the control group was due to their improved level of physical activity during the summer months, and that effective exercise programs must include adequate provisions for exercise during both summer and winter.[26]

We also studied a group of elderly women (mean age 81) for the effects of exercise on bone. Twelve subjects participated in a 45 minute exercise program 3 days/week for three years. Eighteen subjects served as a control group. The physical activity program consisted of chair exercises of 1.5 to 3.5 Mets. Bone mineral of the radius midshaft, measured by photon absorptiometry, increased by 2.29% in the physical activity group, while decreasing 3.28% in the control group.[27]

A number of other studies confirm our findings of increased bone mineral through exercise in middle-aged and older women. A significant increase in total calcium and in calcium balance was noted in nine postmenopausal women exercising one hour, 3 days/week (42mg/day vs.-43 mg/day for the controls).[28] Krolner et al. reported that work capacity was correlated with lumbar (but not forearm) bone mineral content in aging women.[29] This pattern was also found in an exercise intervention program, where 16 women 50-73 years old trained one hour, twice/week for 8 months. Lumbar bone mineral content increased by 3.5%, and radius bone mineral declined by 3.6%/year. The control group lost approximately 2.7% in both the lumbar spine and radius during the same 8 month period.[30]

Physical activity may increase the strength of bones in addition to, and by other mechanisms than, increases in bone mass alone. In a study on chickens, no difference in bone mineral was found between exercising and control groups. The strength of the bones in the exercise group, however, was significantly greater than the controls.[31]

SUMMARY

The average sedentary woman is subject to a loss of .75-1%/year in physiological function after the age of 35. This loss can greatly imperil their quality of life, when muscle weakness, decreased work capacity, stiffness, and fractures make them unequal to the tasks of daily living. Much of this loss can be prevented or reversed through programs of physical activity. Women who start and stick to an exercise program at any age can look foward to a healthier, and possibly longer, life.

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FEMALE MUSCULO-SKELETAL SYSTEM

Robert P. Nirschl, M.D.

Dr. Robert P. Nirschl is the medical director of the Virginia Sportsmedicine Institute in Arlington, Virginia. He serves as medical consultant to the President's Council on Physical Fitness and Sports and is on the Sportsmedicine Committee of the United States Tennis Association. Dr. Nirschl is an orthopedic surgeon and has been recognized as one of the 29 best sportsmedicine physicians in the United States.

We are going to touch on some of the highlights of the musculo-skeletal system, specifically for women. Female differences are pelvis, breast size, musculoskeletal strength, body fat; there is also a problem with scoliosis, and we will touch on osteoporosis and pregnancy. When we look at the differences between male and female we see a very pronounced difference in reference to the pelvis itself. The male has an android pelvis, the legs are quite straight. The female has a wider pelvis and has a higher angle at the knee, by an extra five degrees, which creates a potential for injury. To look at the female pelvis again, there tends to be femoral rotation, and also the trochanter tends to be prominent. Therefore, the female is much more likely to dislocate her knee cap. The female is also more likely to develop runner's disease or chondromalacia patellae. Also, the female is much more likely to get bursitis or tendonitis about the hip.

Another thing that occurs is scoliosis, which is much more common in women than in men. I am pleased to say that now there are screening clincis by school health nurses and so forth across the United States, and that has decreased the seriousness of the problem of curvature of the spine from scoliosis. Large breasts tend to exaggerate the potential for thoracic kyphosis, or round-shouldered posture. Females who indeed carry extra weight up front tend to then create problems of stress at the mid-basic with potential of back strain, compression fractures and a tendency toward internal shoulder rotation. From those points of view there is a stiffness and tightness in the shoulders, and a slight increase in shoulder bursitis and tendonitis.

Young mothers are very vulnerable and susceptible to increased back strain on the basis of just lifting and caring for the child itself. The point is that young mothers should work to control the mechanical forces, otherwise they are going to be subject to back strain. A women who is four weeks from delivery still shows the effects of weekness in her abdominal muscles and when third trimester pregnancy occurs, and the tummy sticks out more, you can see what happens concerning lordosis, or sway back. You see what benefit flattening the abdominal muscles has in flattening the spine and I think that is a plea for all of us to make sure we keep our abdominal muscles in good tone.

I am just going to touch on osteoporosis, which causes pain, inactivity, fractures, possible deformity and death. A young woman who manifests some of these kinds of problems and has compression fractures in her spine, has a hunched back which puts pressure in the thoracic region and up in the neck. The issues involved here are that the bones are thin and fractures occur.

As Dr. Smith alluded to, nutrition and exercise are very important in osteoporosis. We find a strong family background in reference to osteoporosis, as well. Invariably, people with osteoporosis are not milk drinkers for whatever reasons, they are coffee drinkers, cigarette smokers, thin, nervous types, and when you go back into their history, they rarely drank milk in their adolescent days. That means their calcium is depleted, their protein has probably been depleted, and of course, the old bugabu of estrogen comes up, and cancer, which has the large PR, while osteoporosis has no PR at all. As Dr. Smith has alluded to, the potential for death from osteoporosis and the maladies associated with it far out weigh the potential hazards of estrogen, possibly 2,000 to 1. I think it is time we had a national forum and some sense was made out of the concept of estrogen. I think, unfortunately, the media, which has so widely publicized other health concerns of estrogen, and the legal community have created harm to the health of a large majority of our citizens.

There are female strength limitations. Females cannot generate the type of power that males can. There tends to be some joint laxity and females become more vulnerable from collision sports and they become more vulnerable in strength sports. Females must then strengthen as much as possible if they participate in vigorous sport activities.

Now the issue comes up. If all these problems can occur, who's in charge of all of this? There are fitness boom flaws resulting from the abdication of the medical community and significant inadequacies of those who cannot appreciate risk factors.

In terms of exercise, I think there has been some confusion as to what exercise is all about and what the goals are. There are three basic exercise categories. There is rehabilitative exercise in which the priority is to promote healing. There is conditioning exercise where the priority is to enhance physiology, in other words make a normal part as good as you can. And, there is sport exercise where the priority is skill level, or basically, to win. The problems are that one must establish her exercise goals. Is it rehabilitation, conditioning, sport, fat or weight control, recreation, or what have you? I think that the largest majority of people who are in the fitness boom have not defined these simple goals and do not understand what they are trying to accomplish.

The exercise confusion, therefore, takes some meaningful thought. Most will take up a sport to get in shape rather than getting in shape to take up a sport. So we call up the guys on the weekend and say, "let's play tackle football this weekend, I want to get in shape." Now the issues are the same even if the intensity of the problem is less, racquetball, tennis, skiing, what have you. To go a step further, conditioning exercises may cause injury also (e.g., if you have arthritis in your knee and you go into a health club and the health club trainer tells you, "well, just use Nautilus," which is maximum strength effort. The next thing that is going to happen is injury). There has been a lack of understanding that rehabilitative and conditioning exercises are separate and distinct. From my point of view, the common injury producers are in fact, the health spas, exercise books, self-help programs, etc., all of which fail to individualize and to recognize risk factors.

I have a little problem with those folks in the fitness clubs, the priority of which seems to be the profit concept rather than the quality concept. Now the exercise choices are, therefore, to establish goals, to recognize risks, to be convenient, to be enjoyed, and to be properly implemented. There should be some pre-exercise evaluation, including the coronary and musculoskeletal risk factors, heredity, joint abnormalities, prior injuries, etc. Without these things, the individual who undertakes an exercise program very often invites injury.

Warmup is not flexibility exercise. The tissues of the body must be warmed, lowering friction, so you are sweating, and then and only then, do you do your flexibility exercises.

Rehabilitative strength programs are a very precise thing. You must have inflammation control, it must be graduated and progressive, and there must be close supervision. There are seven varieties of strength programs available. These include active water and land calisthenics type exercises (even frail people with osteoporosis can participate in water resistence at the side of the pool); isometric, isotonics, isoflex isokinetic, and iso-agonis exercises all have their proper place.

One of the biggest problems I have with the fitness boom is 'let's do it the Jane Fonda way' or 'let's do it the Nautilus way,' etc. The real issue is that many individuals need all of the ways in the right sequence. Therefore, the exercise must be suited to the individual, not the other way around.

People ask me what kind of equipment they should have in their industrial fitness plan. The first thing is not equipment, but to get somebody who knows what to do. Once you get somebody who knows what to do, then we'll talk about equipment. There are so many places that have tons of equipment and nobody who knows how to use them.

Concerning formal flexibility programs, I believe that strength return should occur prior to major flexibility exercise in most instances, precise supervision, again, and warmup prior to stretching. Like strength training, there are multiple flexiblity techniques, not just one.

Another point to be made is that good conditioning is separate from fat weight loss. There are a lot of people who came out of the German concentration camps who had superb lean body masses. Not a one was in good health or good condition.

Do not confuse your goals, do not underestimate prior injuries, recognize hereditarial limitations, and there must be individualized end point. We do a little sequence, particularly with our rehabilitative exercise, and that is do a proper warmup. A little anti-inflammatory medicine like aspirin is okay, sometimes using a brace or a joint warmer, and of course, the proper exercise and the proper technique and appropriate cooldown thereafter. If there is an inflammatory response (pain or swelling), follow with 30 minutes of icing.

If you get into trouble, these are concepts of treatment: relief of inflammation, promoting healing, rehabilitative strength training followed by flexibility later, and control of force loads by counter force bracing, proper technique and equipment. Let me make a point here. Relief of pain and the promotion of healing are two separate and distinct events. If you get a cortisone injection and you feel good, your tendon is not necessarily healed. Rest does not heal. Rest prevents aggravation of injury, but in fact promotes atrophy if it is over done. Graduated supervised strength programs promote the healing response. A body electrical effect appears very important in the healing response as well. An anti-inflammatory medicine will not heal and early flexibility often invites injury, particularly in muscle pulls such as hamstring.

Let me leave you with this thought. Often overlooked and probably one of the greatest causes of death in the United States is heat exhaustion and heat stroke. A headline in the Washington Post about three years ago, "Jogger Dies, Other Missing." The missing was also found dead, running in a 10 mile race in Herndon, Virginia. They both became delirious, wandered off the track, and died of heat exhaustion.

And, a final point. Exercise must be individualized. We are all different. We cannot all do everything. You must recognize your limitations, hereditarial, injury wise and what have you. No one can pick up a pretty picture book and look like Jane Fonda or Victoria Principal by doing what they do. You can't do it. You have your own end point. Exercise is a highly individual effort.

THE FITNESS MOVEMENT AND EATING DISORDERS IN WOMEN

Kelly D. Brownell, Ph.D.

Dr. Kelly D. Brownell is an associate professor at the University of Pennsylvania School of Medicine in the Department of Psychiatry. He is a psychologist specializing in the behavioral aspects of cardiovascular risk reduction and eating disorders. Dr. Brownell was a visiting scientist to the National Cancer Institute, a part of the National Institutes of Health. He is a consultant to Campbell's Institute for Health and Fitness, Ross Laboratories and the Department of Defense.

I am honored to join the distinguished speakers and audience at this conference. The speakers thus far have covered important territory. Much as been said about health and fitness. The very existence of this conference is testimony to the almost universal acclaim given to the fitness movement, acclaim that is long overdue.

The wave of enthusiasm about exercise, diet, and fitness will have positive and negative effects, some specific to women, some to men. The eating disorders of anorexia nervosa and bulimia occur almost exclusively in women while obesity occurs in both sexes. Each may be caused or at least faciliated by society's concern with fitness and physical performance. I consider this concern very positive, but we must be sensitive to its casualties.

I would like to share my thoughts on the psychology, physiology, and anthropology of eating, exercise, and the control of body weight. Even if I were expert in all areas, I could not do them justice in a short talk. Therefore, my discussion will cover several basic facts and will, I hope, generate some thought.

Physiological Influences on Body Weight

I begin by posing the following question. Imagine eating at a restaurant and observing a fat woman eating a hot fudge sundae. If at that moment you were asked whether obesity is physiological or psychological, how would you cast your vote? Most people, including health professionals, favor the psychological explanation. If only it were that simple!

One common assumption is that obesity must be psychological because it is seen frequently in humans and rarely in animals. It is true that obesity occurs rarely in animals unless they are domesticated and/or bred to be fat. One doesn't see spontaneous obesity in deer, wolves, and other animals living free.

Animals in the laboratory also tend to control their weight. Rats given a mountain of laboratory food, affectionately called rat chow, will eat only enough to maintain normal weight. Furthermore, if the animals are forced to lose or gain weight, either by food restriction or forced feeding, they will compensate by eating more or less when food is available to return to their normal weight. What keeps their weight under control?

The picture might be different, however, if animals had a diet with the palatability and caloric density of the human diet. Scientists have now investigated the effect of allowing animals access to a "supermarket" diet with foods like chocolate chip cookies, peanut butter, condensed milk, and milk chocolate. A notable researcher in this area is Anthony Sclafani of Brooklyn College. He found that rats given this diet gain 269% more weight than animals on the bland but nutritious chow diet. The animals were not forced to eat the high fat foods and had access to the standard diet.

Let us reflect for a moment on what this means. Some animals given this diet will triple their body weight. Take your own weight and multiply it by three. That is the effect of mere exposure to the diet, with no culture or psychology involved. Studies with humans have shown the same biological preference for foods high in energy density, even in day-old infants.

This preference may have survival value if viewed in evolutionary terms. In the case of animals, and of humans until recently, food was scarce sometimes and abundant others. An organism with a preference for high energy foods would be most effective at storing energy when available and best able to survive periods of deprivation. This preference should be particularly strong for fat, which has twice the energy (calories) per unit weight of protein and carbohydrate. Perhaps humans are cursed by a physiology that craves "fattening" foods and by a culture which provides ready access to those foods. The predisposition to be fat would never be expressed in poor countries with food shortages, except in members of the upper class with the means to secure the food. This is exactly the pattern seen in world surveys.

I present this information not to prove that obesity is genetic or biological, but to share my appreciation of how important these factors may be in determining body weight. I no longer observe the woman with the hot fudge sundae and speculate that she is weak-willed or self-destructive.

Social and Cultural Influences on Body Weight

As we turn our attention to social and cultural factors, the picture becomes even more interesting. We have all seen the covers of women's magazines with pictures of scrumptious desserts having untold calories, accompanied by banner headlines proclaiming the wonders of a miracle diet. Nothing better typifies this paradox of modern society. We are blitzed with encouragement to eat high-calorie foods while being pressured from all angles to be thin. It is no surprise that eating disorders are on the increase.

Food is celebrated in our culture, as it is in most others. Nearly every holiday is marked with special foods, certainly not the foods found at a salad bar. One holiday in particular is noted for its celebrants being as stuffed as the turkey they eat. When I began my years of playing baseball, my Little League coaches would reward us for winning, and you can bet we did not cry out for a nice spinach salad. These are but examples of the cultural climate in which our food decisions are made.

The pressure to eat starts early and does not relent. The average child sees 10,000 food commercials each year, the majority being for sugared cereals, soft drinks, and candy. This is quite the repetition of a consistent message—"eat junk!" The messages are conveyed in an appealing manner by childrens' heroes. At the supermarket, the sugared cereals are at eye level—for the child. The check out line strikes fear in the heart of any parent shopping with a child who can alert anyone within a half mile that a candy bar is the price for keeping the peace.

These conflicting pressures push more people to the extremes of body weight, both fat and thin, hence the eating disorders. I refer here to obesity at one end of the continuum and anorexia at the other. These problems are serious and may be exacerbated by the emphasis on fitness. For many young athletes, particularly girls, there is extraordinary pressure to be thin. This occurs not only to enhance performance, but to improve appearance in sports like figure skating.

Sometimes these pressures force girls below the weight at which their bodies feel comfortable, something they can accomplish only by restricting intake in a very stringent manner and by exercising far more than they need or enjoy. When this occurs at precisely the time (adolescence) that the female lays down body fat naturally, physiology and culture square off and create a no-win situation for the victim. This phenomenon applies to all young females, but is pronounced in those in gymnastics, long-distance running, and figure skating. Male wrestlers have similar concerns about weight, as do girls who aspire to be models and ballet dancers. My plea is for parents, coaches, and health professionals to be sensitive to the risks of pushing too far.

Psychological Barriers to Exercise

Let us now consider people who exercise too little. There are several psychological and emotional barriers which prevent many people from exercising regularly. Everyone knows that exercise is good for them, and most have experienced the positive effects of regular activity at some point in their lives. However, the vast majority of the population is sedentary, the fitness craze notwithstanding. One surprising statistic is that 50% of men prescribed an exercise program after a myocardial infarction drop out within 6 months. These men have a compelling reason to exercise, yet even they resume a sedentary lifestyle after brief bouts of activity. This indicates to me that motivation is more important than education.

One barrier to exercise is the idea that it must hurt and be tiring to be helpful. The exercise physiologists have put science behind this notion, but the basic message is the same—no pain, no gain. Inherent in this notion is the concept of an exercise *threshold,* a point below which exercise has no value. We all know the three-part equation for aerobic training: frequency (3 times per week); intensity (70% maximum heart rate); and duration (15 minutes in the target zone). This formula can be the source of despair among non-athletes because they believe that exercise in the amounts they can accomplish is not worth the effort. This ignores the psychological and physical benefits which result from exercise in *any* amount and discourages people who must train long and hard to even approach the aerobic threshold.

The idea of a threshold is valuable for science and for people who train specifically to improve cardiovascular conditioning. For others it is a barrier. Many of my patients begin with modest activities like walking, and then ask, "have I done enough?" My response is that a little exercise is better than none, and that walking at any pace is better than watching television and munching pretzels. I like to supplement the usual focus on jogging, cycling, swimming and other conventional exercises with a focus on lifestyle activities like walking and using stairs.

Possible Dangers of Weight Fluctuation

I would like to describe a study done with two of my colleagues from the University of Pennsylvania, Drs. Eileen Shrager and Eliot Stellar, and Dr. M.R.C. Greenwood of Vassar College. We set out to develop an animal model to test the common pattern in humans of losing weight and gaining it back. Dieting occurs with great frequency, especially in females, but far too often weight loss is not followed by maintenance. The noted nutritionist Jean Mayer dubbed this the "rhythm method of girth control.

Our interest in studying this pattern came from experience with dieters who did not lose weight despite low intakes. These dieters tended to be those who had lost and regained many times in the past, raising the possibility that the cycling had physiological effects which made subsequent dieting more difficult.

Our study involved three groups of Sprague-Dawley rats. The control group stayed at normal weight on a chow diet throughout the experiment. The other two groups were given a high-fat diet to become obese. One group stayed obese while the other was dieted, allowed to regain, and then put through this cycle again. At the end of the experiment, the obese dieters and the statically obese group were at the same weight—only their dieting history was different.

The dieting produced remarkable effects in the animals subjected to the "yo-yo" syndrome. These animals lost 150 grams during their first diet. This required 21 days. The same weight loss required 46 days on the second diet, even though food intake was identical on both diets. The effects were even more striking when the animals were allowed to eat at will and regain weight. To regain after the first diet required 45 days. To regain the same weight the second time required only 14 days.

It appeared that these animals responded to the dieting and regain cycles by becoming more metabolically efficient with their energy. When dieted a second time they lost weight more slowly and when allowed to regain a second time, they regained more rapidly. Furthermore, we measured physiological changes in these animals. Compared to the animals who remained obese, the animals who cycled had more fat cells in certain parts of the body and had elevated levels of lipoprotein lipase, an enzyme which regulates the amount of fat incorporated into the cell.

Several cautions are warranted at this point. This was the first study with animals and more must be done. The degree to which this animal model duplicates human experience is not known. It does seem worth pursuing, however, because the effect is powerful and is consistent with what we suspect in humans.

Increasing Motivation Through Competition

I would like to turn my attention to a more applied study done in the community. This was a weight reduction program done at work sites in Williamsport, a city of about 30,000 in north central Pennsylvania. The program was done under the auspices of the County Health Improvement Program (CHIP) and involved Drs. Rita Cohen and Albert Stunkard from the University of Pennsylvania and Michael Felix and Nancy Cooley from CHIP.

Dr. Stunkard and I had achieved only moderate success previously with work site programs in New York in which we applied our standard clinical program with employees of department stores. Our expectation was that our clinical program would be more effective in the worksite because the social bonds between workers would facilitate adherence. Our results were instructive but not encouraging. The drop-out rate was high and weight losses were small. This prompted us to test a much different approach in the CHIP project.

We experimented with weight loss competitions in working settings, first in banks. The presidents of three banks issued a challenge for a weight contest. The employees who wished to join were weighed and given a weight loss goal, to a maximum of 20 pounds to discourage crash dieting. The goals were summed for each bank and the winning bank was to be the one achieving the greatest percentage loss. Each perosn paid $5 that was pooled and awarded to the participants in the winning bank. There was a scoreboard in the lobby of each bank which gave up-to-date feedback of where each bank stood in the competition. The only program given the participants consisted of a weekly weigh-in by a research assistant and the distribution of a weight control manual. Unlike other programs, structured group meetings did not occur and professionals did not provide direct treatment.

The results gave us great cause for hope. Fewer than 5% of the participants dropped out, compared to 30-50% in other work site programs. The weight losses were approximately 40% greater than in other programs, even though the competitions were shorter in duration. We followed the participants for 6 months after the program, and the average person had maintained 80% of the weight lost initially. My colleagues Cohen, Stunkard, Felix, and Cooley have since carried out competitions between teams of persons assigned randomly to teams within an industry and competitions between divisions of an industry. The results have been similarly encouraging.

There were two additional results of the competitions that I would like to highlight. The first is that both employees and managers were enthusiastic about the program and reported increases in morale, improvements in employee-management relations, and so forth. The second is that the program was more cost-effective than other clinical and work site programs.

The focus in some of this work is shifting from education to motivation. I expect that only small improvements in the success of health programs will occur with further efforts to develop and package materials, computerize learning systems, etc. I expect greater improvements with the development and refinement of motivational approaches.

PHYSICAL FITNESS AS A LIFESTYLE

Guy G. Reiff, Ph.D.

Dr. Guy G. Reiff has been professor of physical education at the University of Michigan for eighteen years. He was formerly the baseball and basketball coach at Colorado State University. Dr. Reiff is a fellow of the American College of Sports Medicine and the American Alliance for Health, Physical Education, Recreation and Dance. He has conducted two national studies on youth fitness and is currently conducting "A Study to Assess the Physical Fitness Status of American School Children, Aged 6-17" for the President's Council on Physical Fitness and Sports.

Just before I came here to Washington I interviewed about 65 girls in elementary, junior and senior high school, asking them several questions: (1) What do you like best about physical education? (2) what do you like least?, and, (3) what do you feel you should get out of physical education? One seventh grader said, without hesitation, ". .a note from my mother", when I asked her what she really needed to get out of physical education. Needless to say, I reworded that question. However, that happens to be the attitude of many children enrolled in physical education today,—boys as well as girls.

I found out that most of these girls liked physical education and activity, especially playing sports and games. They claimed that they liked more of the social aspects of these activities than the skills. Watching them play volleyball was a revelation; maybe one out of three tries somebody hit the ball back over the net, but they were yelling and screaming and having fun. When asked what they liked least the popular answer was running. And why? Because some said their teacher made them run when they were tired. Some girls liked running, most did not. They especially hated running around a track.

The conclusion was that we need to challenge these children,—in most cases that is not being done, even in the classroom. Secondly we need a variety of activities, and we need to show them *why* they are learning these activities. In short, we need to talk about physical activity as a lifestyle, not as a physical education activity period.

I have twenty minutes to talk about fitness in the schools, . . .I could talk for 20 hours because I think it is such a serious topic. I think it is one of the most serious and vital topics we have to talk about because it has to do with our young people. My remarks come from 25 years of research on youth fitness. I have tested and talked to children and physical education personnel all over the United States, and have probably personally visited and seen more physical education programs than anyone alive or dead. Here are some ideas about the seriousness of the problem and what we can do about it.

First, let me ask how many of you have health insurance and life insurance? Now, how many of you gamble regularly, say about $20 to $30 per month on races, sports events, etc.? Very few gamble? I submit that you are all very big gamblers. You are gambling that you are either going to get sick or die early, and the insurance company is gambling that you are not. Nice game. If you die or get sick you win. I told a Blue Cross representative the other day that we are rewarding the wrong behavior. We should be paying people a premium to stay healthy and live longer, not the reverse. In the long run they would make more money.

Most of us feel that quality of life is important and that longevity is important. We would all like to live to enjoy the fruits of our labor. The ironic thing is, most of us don't know how to do it, outside of choosing a good set of parents. Yet we are all products of the public or private schools, and we have all had physical education classes at one time or another. The basic question of interest to all of us is "how do we go about it?" One crucial point seems very clear,—the earlier we get people on good "lifestyle habits" the better, and it is extremely important that these habits be developed at an early age. It is best to start when young, hopefully around the third or fourth grade these concepts will start to take hold.

So, what I wish to talk about today is the fitness of our country's youth,—specifically three questions:

1. What is the problem?
2. Who can do something about it?
3. What can be done about it?

I wish to emphasize that this problem is of tremendous concern to everyone in this meeting, doctor, lawyer or Indian chief,—it is a complex issue, an immense challenge. There is probably no single best solution, but, it can be solved. I'd like to present one possible solution today.

Let us outline the problem by giving you a two minute capsulation of about 20 years of applicable research findings. Seventy-five percent of all deaths in the United States are due to degenerative diseases such as heart disease, stroke, and cancer. Cardiovascular disease accounts for approximately one-half of all deaths. Cancer accounts for another twenty percent. Most serious illnesses, such as heart disease and cancer are related to several factors, such as obesity, poor dietary habits, lack of exercise and severe emotional stress. Data from national studies of youth fitness over the past 25 years have consistently reported our school children were underexercised, at least regarding activites demanding vigorous exertion. In 1980, the Surgeon General of the United States declared that ". .the fitness of our youth is a national tragedy."

Listed below are some additional summaries.

1. Cardiovascular disease is a childhood disease, not an adult disease. Young children (grades K-3) have been identified with one or more risk factors associated with heart disease. In general 40 percent were found to have one risk factor, and 60 percent of the 40 percent manifested two or more.

2. Physical performance levels of school children are low.
3. Obesity is challenging malnutrition as a major American health problem, and,. .fat children usually become fat adults.
4. At age 30, the number one cause of death for males is heart attack. Heart attack is number two for females at age 30.

While heredity determines basic biological characteristics which may increase risk for certain disease, most disease results from an individual's environment. Most major risk factors are environmental and behavioral, thus, therefore, they are amenable to change. A former Secretary of Health, Education and Welfare, J.S. Califano in 1979, stated that. . ."the individual can do more for his own health and well being than any doctor, any hospital, any drug, or any exotic medical device." We are, however, still a long way from any kind of national commitment of good health habits necessary to significantly change the statistics. Today only about 11 cents of every tax dollar goes for health care. Let us examine some numbers of interest.

1. Employee health related costs for U.S. industry are $113-$125 billion, 10 percent of payroll costs.
2. Backaches account for 93 million days per year of lost work, $29 billion in lost productivity.
3. Heart disease costs U.S. industry $25 billion a year in deaths, $11 billion in disability costs and 700 million in replacement costs.
4. Recent surveys disclose that 60 percent of our high school students are intoxicated at least once every two weeks.
5. One third, 33 percent, of our school children are on some kind of drugs.

The total cost of our health and its effects is one billion dollars an hour; recent data from Washington disclose that we are trying to save our medicare system, which could go broke in five years. I leave it to you,—do we have a problem?

The second question was, "who can do something about it?" It doesn't take much imagination to identify the private sector, the family and the public schools.

Let's conclude that the private sector can, and is, doing a pretty good job. However, in the final analysis, it is pretty expensive and not affordable to all. Sometimes its need to appeal to customers, or consumers means a program that is popular, but not necessarily effective.

The family could be the most economical and efficient. We have, however, some problems with the family unit today. It has changed over the past 25 years. Four major influences have changed the family unit as we once knew it.

1. Single parents
2. Skyrocketing divorce rate
3. Dual careers
4. Women in labor force

Parents just don't spend as much time at home as in the past. Kids are left to their own devices,—there is a lack of proper role models. Also, parents are sometimes less informed about good health practices in exercise science and nutrition than their youngsters. One-fifth of our children now come from single parent families. In the next decade, we project that one-half will come from single parent families. Presently, one-fourth of children under three years of age are living under poverty line conditions . This is the most rapidly escalating statistic, it could be close to 50 percent in the next decade.

For these reasons, I don't think the family is the best vehicle overall, although it can, and should be, a tremendous influence. That leaves the public schools. The crucial point is again very clear,—the earlier we create good habits the more effective the results. The best, quickest, and most economical mechanism is the public schools. So, now, what can be done about it?

We need to bring physical education, health education and nutrition together into a lifestyle program in the schools. Right now they are all operating in a vacuum, each to its own thing. No place are these concepts and habits brought clearly into focus where we truly change or adapt to good lifestyles. We need to change our philosophy, retrain our teachers, and inform the public. By public, I mean students, parents, teachers, and administrators. Tell them what our objectives are.

Presently, it is putting it mildly to say that most teachers cannot really tell you what their objectives are. . .that is, what they are trying to teach and why. Parents and administrators are not sure either, and, students in most schools don't have the faintest idea. Due to financial hardships, cutbacks, etc., teachers are not as mobile. There are fewer jobs, and most are holding on to what they have. Thus we have built up a pool of teachers who have Master's degrees from ten or more years ago. They were not taught the concepts of exercise science, nutrition, or lifestyle programs. The emphasis has been on teaching sports skills. About one-third of our school districts do any fitness testing at all. Contrast this with math or science, or english? What do you think would be the public's reaction? Most have no detailed report home except a letter grade, usually based on "attitude", and "participation". As a result, programs are being cut, along with jobs, and, I submit, our field is in a state of disarray.

Third question, what can be done about it? Here is one possible solution. We have developed a model program in Michigan called "Fitness for Youth", in which we tie the concepts of exercise science, nutrition, and physical activity together into what we call a "lifestyle" program. We are currently working with six school districts in Michigan, and are exporting this program to two other states who have requested it.

As a result we have had exposure on TV, radio, press, and lately, an appearance on the Today show. Since then we have had over 500 letters from all over the U.S. asking about the program. Guess where 70 percent of these request come from? *Teachers!!!* Teachers who say they want to do something, but don't know what to do! Teachers who need retraining, teachers who are crying for help, teachers who want to do something, teachers who are panicky over program losses, teachers who face possible loss of jobs! What are we doing about it?

The Fitness for Youth Project retrains teachers. We work with teachers right in their schools. We feel this program should start in the elementary school and progress through the ninth grade. The high school should furnish supervision in evaluation and counseling, and perhaps some lifetime sports skills teaching. By the time the student is in high school he should already know how to set up his own conditioning program. Therefore, if,. . .and I say if. .physical education is to be cut, we recommend cutting at the high school level, not. . and I repeat,. .not, the elementary. Since space does not permit a detailed description of this program let me present briefly our basic objectives and outcomes.

Here are some basic aims and outcomes.

1. Design methods to have children develop reasonable physically active and nutritional lifestyles throughout life.
2. Transfer the assumption of responsibility to the student for the development of a healthy lifestyle.
3. A common denominator is a computerized "fitness profile" which presents the student and parent data on biomedical measurements and physical performance measurements. We report student profiles on blood pressure, total serum cholesterol, skinfold fat, percent fat and height and weight. We report results of performance testing on cardiovascular endurance, abdominal strength (both static and dynamic) and flexibility.
4. The Youth Fitness Test battery is used for those students who wish to qualify for an award from the President's Council on Physical Fitness and Sports. We have had over 60 percent participation on this test.
5. Afternoon and evening meetings with parents and children who had poor biomedical/performance results are scheduled. We hold workshops on good nutrition. By the way, we find the average parent woefully ignorant about even basic principles of nutrition, including use of salt and animal fat. They are also poor label readers, largely because they don't know what to look for.
6. We have students setting physical fitness goals, their goals, . .not the teachers' goals.
7. We have generated enthusiasm and cooperation from parents, students and the community.

I emphasize that this is not a "get the kids in shape" program. We can do that in about eight to ten weeks, . . .but, as you know, there is little or no carry over. Many teachers have gone off on a "fitness binge" with their students and watched it crash after the first semester. Remember, this is a "lifestyle" program, one which demands ingenuity, dedication and enthusiasm from the teacher (to say nothing of an example).

I know people will say (they already have) that you cannot do these things in the public schools. Well, let me tell you, we are doing it, it can be done, and, it must be done. The United States has more gymnasia, more swimming pools, more athletic programs, more running tracks, more physical educators and more coaches than any country in the world. We have the best medical research system in the world, more hospitals, more doctors, more support personnel. Yet, we lead the world in heart disease! This is a vitally important job! For our physical education teachers not to assume a leadership role in one of societies crucial tasks,. . .health maintenance and health development should be considered a waste of our professional resources.

IF WE DON'T DO IT, WHO WILL OR CAN? WHAT BETTER LEGACY CAN WE LEAVE OUR YOUNG PEOPLE AND OUR COUNTRY?

LUNCHEON ADDRESS

Friday, April 6, 1984

Millie Cooper

Millie Cooper has co-authored the book *Aerobics for Women* with her husband, Dr. Kenneth Cooper, founder of the Aerobics Center in Dallas, Texas, and *What Every Woman Still Knows,* with Martha Fanning. She and Dr. Cooper spend a great deal of time travelling throughout the United States and foreign countries lecturing on the role of exercise for a better life. She spends a great deal of time responding to the thousands of letters she and Dr. Cooper receive every year. Most recently, Millie Cooper was presented with the 1984 National Honor Award by the California Raisin Advisory Board for outstanding leadership in women's fitness.

We can't all be Olympic athletes and the majority of us never will be. That is what I hope my forte is, reaching those people who will never be Olympic athletes but who can have a better quality of life by practicing preventive medicine. You heard some marvelous scientific data this morning and a lot of the people you work with don't understand that kind of data. My whole point for being here is to talk about motivation and to try to give you some tips, perhaps, on how to motivate people you teach and come in contact with, how to experience a better quality of life.

I think there are two misconceptions about physical fitness. First of all the worst thing that has happened to this country, as far as I am concerned, is that we have equated physical fitness with athletics! You do not have to be an athlete to be physically fit. Probably as few as 10% of the kids in our schools are naturally athletically endowed. But where does most of our time, energy, and money go? Working with those few kids who have that natural ability. Now I love athletics tremendously but I think we ought to get things in proper perspective. We ought to be teaching lifetime sports, something people can live with.

The other misconception about fitness is that we have equated it with how you look. How you look on the outside is not the best indicator of what kind of physical condition you are in. I really want to get the American women out of the legwarmer leotard mentality of physical fitness; there is much more to physical fitness than just putting on a leotard and legwarmers. As a matter of fact, that's what I want to talk to you about today—the four major building blocks to a good preventive medicine program: proper weight; proper diet; proper exercise; and avoiding tobacco. If you want to live a long happy productive life, you will have to look at those four major building blocks. We are interested in cardiovascular pulmonary fitness the medical terminology for your heart, blood vessels and lungs. Not everyone you deal with is a professional and you have to learn to relate to these lay people. Speak so the people understand you. Most exercise physiologists will agree that exercise can be divided into at least four broad categories.

The first type is isometric exercises: contraction of a muscle without movement of a joint. About the only thing that is going to get you in condition for is perhaps pressing down on podiums but it is not going to strengthen your heart, lungs, and blood vessels.

The second broad classification is isotonics. This is the contraction of a muscle but there is movement of a joint and this is where weightlifting and calisthenics fit in. When you just do weightlifting or calisthenics, and you don't put a good aerobic program with it, it's like giving a car a new coat of paint when what it really needs is an engine overhaul.

The point is, it doesn't matter how great you look on the outside if you're falling apart on the inside, because you aren't going to be here to enjoy how great you look on the outside.

The third type of exercise is anaerobics. Anaerobics is getting close to what we feel are the best type of exercise because they make the body demand large amounts of oxygen. But the problem with anaerobic exercises is that they are too short in duration to do you that much good cardiovascular-wise. You get that old heart pounding but just about the time you start to get some benefits, you stop. It is a start/stop activity like the one hundred yard dash.

Exercise can be used in three very distinct ways: rest and relaxation, figure control, and cardiovascular conditioning. You will hear guys go out, ride on the golf cart for 18 holes, come back and say, "Man, I feel fantastic!" They do. They have used that to relieve their mental fatigue but unfortunately, they deceive themselves into thinking they've done something for their heart. Obviously if you've been riding on a golf cart, you haven't done anything for your heart. When you use an aerobic type exercise, you are going to lose inches, look better, relieve mental fatigue, but more importantly, you've done something for your heart.

It makes me think of the woman who wrote and said: "Dr. Cooper, I'm an avid horsewoman. I ride two hours every day and I want to know how many aerobic points I get for that." And he wrote back, "Ma'am, you don't get any but give the horse a bunch."

There is an old expression, "Horses sweat, men perspire and ladies glow." Well ladies, you aren't going to glow until you sweat a little bit, too. I used to come back in the mornings from running and I would be sweaty, no makeup, my hair hanging down and my husband would say: "Honey you look so beautiful," and I knew he was lying. It really makes you feel good. So many times when we think we look our best isn't when we actually look our best. Beauty is not skin deep. There is a radiance and a glow in the face of people who are physically active that people who are inactive simply do not have.

The forth type, and I want to tell you something—if you're under 30 years of age and you say, "I do my aerobics," you probably mean you do aerobic dance. But there's a lot more to aerobics than aerobic dance. Back in 1968 when my husband wrote his first book, *Aerobics*, and he would go around to be on TV shows to promote it and they would say, "Now Dr. Cooper, what is this aerobatics stuff?". I remember I was invited to speak to the oldest social club in Dallas, Texas and I went in that day. Most of the ladies were in their 80's or 90's, and one of them had her shawl on and turned to the other one and said, "What's this young woman going to speak to us about today?" And the other said, "I think acrobatics." And I thought, I would probably have as much luck with acrobatics as I would with aerobics. Much to my surprise, that was one of the most attentive, receptive groups I've ever had the privilege to speak to.

I have seen tired wornout looking old men and women in their 20's. Do you know where you can see some tired, wornout old women? High school, sixteen year olds, inactive, overweight, cigarette-smoking girls and they already look like dissipated old women. I think a lot of people exist to 90 but they never live past 20.

There are some medical conditions which respond beautifully to regular exercise. Take a walking program. It doesn't have to even look like exercise, but the regularity is what's important. First of all you are going to notice that you breath easier. A lot of people just breath out of about the top half of their lungs and if they have to physically exert themselves to walk up a flight of steps, they're huffing and puffing. I think there is actually a medical condition known as the sticky-lung syndrome. Your lungs get like a balloon that's been around the house and start to stick together. When you exercise and try to force air down into the lower part of the lungs, you think you're having a heart attack. Chronic pulmonary disease, emphysema, is a real problem in this country. Let me hasten to say that I'm not standing up here telling you that if you start to exercise that it's going to cure emphysema, but I am telling you that they're using exercise as a therapeutic tool working with many patients with chronic pulmonary disease and it's exciting to see some of the results.

I think one of the most fascinating studies we've ever had under the auspices of our research center in Dallas, Texas, has been our study with asthmatic children. It is great to see some of these young kids incapacitated with wheezing attacks be able to have a somewhat normal life by putting them into slow progressive exercise programs. Another benefit you can expect to receive is that your blood vessels enlarge. Your blood vesels enlarge when you become engaged in an exercise program. I don't think any physician is unenlightened enough in this day and age to say that, "I don't really believe exercise plays a role in the prevention or rehabilitation of heart disease." But believe me, there were a bunch of them in the early days who would say that. But regardless of what your physican's attitude is regarding exercise and heart disease, if you have a heart attack, or you have a friend who has a heart attack, and he's fortunate enough to survive, you tell me what's the very first thing that physician does. He puts him on a walking program. But how many physicians do you know put their patients on an exercise program before they have the problem? The American Health Foundation made this statement: "Ours is a legacy of a medical system that meets the patient with too much care, too late." It really doesn't matter how fine a coronary care unit your local hospital has if you don't make it there.

I'm not saying that if you exercise regularly you're not going to have a heart attack. But I can tell you if you do exercise regularly, you are practicing preventive medicine. Some studies, such as Dr. Bruce's in Seattle, show that if you're exercising regularly and have a heart attack, your chances of survival are as much as five times greater than the individual who has been doing nothing. You are practicing preventive medicine.

When you get an obstruction in one of the major coronary vessles, regular exercise will perhaps have built up a new collateral around the obstruction, allowing survival. This is a very simplified explanation of how regular exercise meets the criteria for being termed "preventive medicine."

When I say your blood vessels enlarge, I realize there is no scientific data to document this, but a satisfied customer could care less about the scientific data. The point is we have received thousands of letters, and in many of those letters people stated that once they started to exercise their varicose veins tended to improve. There is nothing to document it, but a lot of people stated, men and women alike, that once they started just a simple walking program, their varicosities improved. What happens, and this is really oversimplified, when you get a varicose vein, your vein loses its elasticity and the blood pools down there, perhaps making that dark ugly spot on your leg. We feel that perhaps with regular exercise you build back up the integrity and strength of that vessel and perhaps that's why they improve. As I said, there is no evidence to prove this point.

Another benefit you can expect to receive from a regular conditioning program, and think about this—just a walking program—anyone can do that, your heart becomes a more efficient pump. I wasn't always this gungho about exercising; this all happened one night. We were at our home in San Antonio, Texas, watching television and Ken said, "Millie take my resting heart rate." I didn't even know what it meant. I took it, it was about 50 beasts per minute. So I said, "Take mine."

And he did and it was bout 80 beats per minute. I said, "So what." Thirty beats a minute difference, that's not so much. He said, "Do you know Millie, tonight your heart is probably going to beat at least 10,000 beats more than mine? You're wearing out that much faster." And I said, "Not a chance." I had already put too much time and energy into him to go down that easily. I put our daughter, Berkley, who was about three, in the stroller, and our fat blond cocker spaniel on a leash and we started out, up and down the hills of San Antonio. It took me one year, before I could run a mile nonstop. Two marvelous things occurred at the end of that year. First of all, one terrible thing—the dog died. We strongly suspected a heart attack but my husband said it was too late for her anyway.

Seriously, two marvelous things occurred. First of all my husband who is a scientist through and through said, "Millie do you realize you have dropped your resting heart rate from 80 beats a minute to 57 beats a minute. Here you were before you were in condition, your heart wasting energy, but then you got in condition and it slowed down and became a stronger more effective pump, pumping out more blood with each stroke." I was glad that excited him. I want to tell you something that excited me far more than that, was the fact that I dropped two dress sizes. I had always been an 8 at the top and a 12 at the bottom. For the first time in my life I could wear the same size dress all the way down.

Now the thing is, if you have a low resting heart rate and don't exercise, that can be indicative of a diseased heart. It's really only truly significant as far as heart disease is concerned when you lower that resting heart rate in response to a good exercise program.

Exercise helps the digestive system. We have a friend who has some nursing homes in Oklahoma and constipation is a real problem with these elderly people. He found that if he gets them out just to take a daily walk around the grounds, in many cases that relieves the problem. People digest their food better, sleep better at night if they are physically active. A lot of people say they get 12 hours of sleep and wake up totally exhausted. Some people get 6 hours and wake up ready to go. You see why it really doesn't matter how many hours you spend in bed; it's not the quantity but the quality of rest you get while you're there. And when you are physically active you just rest better at night. It's as simple as that.

One of the benefits you can expect to receive if you're physically active, is that you become less of a hypochondriac. I don't know that you have less headaches, sore throats, aches and pains, etc., but you handle them differently. You have a new attitude. When someone comes up and says, "Hey, how do you feel?" you don't proceed to tell them, you just smile and say "Great!" That's what they want to hear anyway.

These benefits are collectively known as the "training response," the training effect. And if you're faithful to your exercise program long enough to taste the exhilaration that comes from feeling really physically fit, no one is going to have to encourage you to stay with your program. If you're exhausted by 10:00 in the morning, that's not living, unless you have a reason from the night before, that's existing.

There are a few clinical conditions where they are using exercise. One of them particularly has been the leading cause of death in this country—you know what that is—heart disease. And women used to think, "Well, when poor old John goes, I don't know what I'm going to do." Well, you might go before poor old John.

Women are starting to become as vulnerable to heart attacks as men, according to a Denver cardiologist. Women in the past were always presumed to be protected from heart disease during their premenopausal years. Dr. Kimball says, "I hate to equate women's lib with this but it would appear that women competing in a man's world are showing an earlier incidence of vascular problems." Now see if this fits your lifestyle: they're eating more, smoking more, and at the same time they're taking on stress situations. More and more women under 40 are having strokes and heart attacks.

I came up on the plane with a young man and he said, "My secretary, sitting at her desk last week, 44 years of age, dropped dead of a heart attack." It is not common to see young people now having heart attacks. Heart disease is not a disease of old men and old women, it is also a disease of young men and women. You don't have youth going for you once you get out of the cradle. Recently there was a statement in the *New York Times* that said since 1950, statistics show a decrease in heart disease. The Surgeon General said that this decrease is due to more prudent living habits, proper diet, proper weight, proper exercise and avoiding tobacco. Since 1950, there had been a 14% increase in deaths from heart attack in men 25 to 44 years of age. Recently there has been a decrease, and that is exciting. Every one of you has probably helped play a role in decreasing that statistic.

I meet young physicians who come through our center for tours who, when asked what they're going to be, say a surgeon or Ben Casey or something like that. I just think how they are missing the boat. Do you know what's exciting in medicine today? Preventive medicine. Anyone can give a pill to treat disease, but to encourage people and work with them in lifestyle changing ways, to me that's exciting. Stress is a pet subject with me—you see it's not uncommon for young children to be diagnosed as having ulcers in this day and age. There is an outstanding book which is out called, *The Hurried Child,* by David Elkin, child psychologist. It says, children today are as much victims of stress as adults. Schools and the media are pressuring young children to hurry and grow up by insisting that they achieve academically, excel in competitive sports, and dress as miniature adults.

Pushing children into the physical, social and psychological trappings of adulthood before they are emotionally ready, according to the author of this book, is creating a high incidence of stress-related symptoms such as drug abuse, promiscuity, deliquency, and suicide at an early age. I live in a rather affluent north Dallas community and I see these young mothers from the time that school stops in the spring until it starts in the fall. Those kids are programmed—baton lessons, riding lessons, camp—I mean, every minute is programmed for those kids. They say the kids get bored. Do they get bored or is it just a heck of a lot easier for someone else to entertain your child than doing it yourself? The stress on these kids is awesome. I really think it's sad to see—stress, inactivity. The attitude in America is, if it moves, just put a motor on it. Remote control television, automatic toothbrushes, remote control door—you don't even have to move if you don't want to and a lot of people have chosen not to.

High saturated fat diet, stress, inactivity; add two more factors: the fact that you smoke cigarettes plus come from a family that has a history of heart disease and you are sitting on a keg of dynamite. I don't want you to think that I'm giving you some biased data from the Aerobics Center. These are the known risk factors as far as heart disease is concerned, according to the American Heart Association, and that's the best source of reference we have at the present time. So if you don't want to have a heart attack, shouldn't you try to eliminate as many of those risk factors from your life as possible? That just makes good common sense to me.

Let's look at the risk factors. Heredity: you can't do one single thing about heredity but I always make a point here. People will come up to me after I've spoken and say, "Oh Mrs. Cooper, my grandmother died of a heart attack at 80 years of age," and they're really concerned. This is the way I understand it. Heredity is only a strong risk factor if you have a blood relative less than 50 years of age that has heart disease or dies of a heart attack, then you really do have to practice preventive medicine. But look at the other risk factors. Stress. And, ladies you play such an important role here. Dr. Fred Heinzelman did a study some time back for the US Public Health Service regarding college professors at three universities, University of Wisconsin, University of Minnesota and Penn State. He put the professors in exercise programs and he found the professors whose wives had a good or positive attitude towards their husband's exercise program, 80% had a good or excellent adherence pattern. In other words, 80% of these men stayed faithful to their exercise program if their wives had a good attitude. If the wife had a neutral or bad attitude, only about 40% of those men stayed faithful to the program. If your husband comes home and you're in a bad mood, it won't take but five minutes until he's in one too. You regulate the atmosphere in the home. A lot of women say, "Well, I want my husband to come home at night because I don't have much time to spend with him." I want my husband to spend time working out before he comes home because I don't want him to drag in the house. I don't want just his physical presence there, I want him alive and alert. I'd rather have three good quality hours with him than six hours of him like a blob. The point is, encourage your mate to get out there and be physically active. It relieves that mental fatigue.

The hardest group I have to motivate, and I speak to all kinds of groups, is career women. They come home at the end of the day and are totally exhausted. They say, "Mrs. Cooper, if you think I'm going to get out there and exercise, I am exhausted." Let me ask you, how many of those women do manual labor? They're exhausted because of mental fatigue. The point is, nothing relieves that mental fatigue like physical exertion. If you will force yourself to get up and be physically active it is amazing how much it relieves you and it doesn't have the side effects like valium.

I come from a very fat family. I am 48 years of age. My sister who is six years older weighed 250 pounds a short time ago. My grandmother died weighing close to 300 pounds. My sister has weeping varicosities. Her legs are so large that you can put your hand up and feel the moisture coming from those varicose veins. You can't even do surgery safely on someone that overweight. My husband told her she was going to lose her leg if she didn't get involved in a good exercise program. She did—she started walking, stationary cycling, and got down to where she was looking great. Then she called me one day and said, "Don't tell Ken, but I weigh 262 pounds." Her daughter got a divorce and she ate and she ate and she ate. Well, she got back in a good program. Then she slipped and fell and cracked her elbow and said, "Millie the doctor says I should have surgery." And I said, "Alice, don't even consider letting anyone do surgery on your arm until you've had a second opinion."

The point is that some of you may want a second opinion to all you've heard today and I like to leave my audiences one of three ways: mad, sad or glad. But if I can help it, you're not going to be indifferent. I think apathy is one of the worst things that happens in this country.

Let me end with this little story.

A flock of geese flew south every winter. On their way back one spring they saw a beautiful farm yard with lots of water and grain. They said, "Let's take a break here." They stopped and refreshed themselves then all but one continued on their way. This one goose thought this is living, I want to stay awhile. So he stayed there a few weeks, a few more weeks passed, a few months, it was easy living. He just forgot about joining his friends. Then one beautiful fall day he heard the call of his fellow geese as they were flying south for the winter. His old heart started pounding and wings started flapping but he only got up to about the level of the barn roof before his fat, deconditioned body started settling back down. He thought, "So what, I'll get in shape and go with them next year." Well the next year they came back and his old heart fluttered and he got excited and flapped his wings, but couldn't even get off the ground. The day came when his fellow geese flew over and he didn't even lift his head up from the trough because he didn't even hear the call any more.

If you can still hear the call of your body saying, "Do something for me," then it's not too late. But if you can't even hear the call, I'll just have to pray for you, I guess.

I think we can sum it up like this. It doesn't really matter how physically fit you get unless you're spiritually fit as well. Every morning I come back from running and I have my Bible study time and by 8:00 I've prepared myself to do the very best of my ability both spiritually and physically. It doesn't mean I'm not going to have any problems the rest of the day, but I can handle it.

WORKING WOMEN SESSION

Friday, April 6, 1984

Moderator: Meryl Comer

Meryl Comer is Vice President and Director of Broadcast Communications for Gray and Company, a Washington, DC, public relations firm. She is the moderator of "It's Your Business," a weekly discussion and debate program produced by the U.S. Chamber of Commerce. An Emmy award winning journalist, Ms. Comer is a former co-anchor and producer of programs for WTTG in Washington, DC.

Panelists:

Susan Hurley DeConcini, M.S.W.	Tenley Albright, M.D.	Cory SerVaas, M.D.
Samuel M. Fox, III, M.D.	Robert P. Nirschl, M.D.	Allan J. Ryan, M.D.

Panelists: Susan Hurley DeConcini, M.S.W.

Susan Hurley DeConcini is a social worker in private practice in Washington, DC. She is an active community leader and spends time as a child care advocate. She currently serves on the National Board of the Office of Social Responsibility and is treasurer of the Congressional Families for Drug-Free Youth. Her husband is the junior United States Senator from Arizona.

As a psychotherapist I believe that depression is one of the most common ailments of American women and that it is directly related to a lack of certain elements, specifically the lack of good nutrition and physical exercise. In my private practice, in the process of taking a history, I find out about the client's family but I also ask about their life style. I have learned that a person's habits are directly related to their ability to cope with life and to solve their interpersonal problems, which is the reason that most people come to counseling.

How does a working woman's physical fitness enter her life? When you think about priorities of life, it is alot to ask one woman—trying to meet their needs, those of their family and duties of their career. Greater numbers of women are working outside the home today; however, unlike the women of yesteryear, many of today's working women are meeting various responsibilities without the dependable family support system. It is any wonder that women might need counseling?

To me, it is impossible to manage all those roles without good nutrition and proper exercise. I think that is why you will find that many successful working women are physically fit. I believe that it goes hand in hand, namely that if a woman wants to be a success in the working world, she should first of all be a physically fit person. Fitness improves your body image and therefore your confidence. If you are proud of your body, you exude an air of success that others sense.

They know that you are in control, not just physically, but mentally and emotionally.

Fitness also gives you a respect for self, the underlying reason for liking yourself. If you respect yourself and how you live, it will affect the entire demeanor of your life from the time you get up in the morning until you go to bed at night and how you react to emergencies. You are much more capable of dealing with life if you are physically fit.

Anyone who has ever been in a fitness program knows that there are no instant answers to anything. This is one thing I try to stress to my clients in psychotherapy. It is an illusion of advertising that instant answers exist and fitness programs teach us to appreciate gradual improvement. This pertains not only to our body but to our interpersonal lives as well. We do not develop a simpatico relationship with our husband, children, or friends overnight. It takes time to build a healthy body and to build good relationships as well.

(Addressing a question from the audience of feelings of guilt as to the time spent keeping fit)

I think that the underlying reason for our existence is to give of oneself to others, whether we are male, female, young or old. Therefore, I know personally that I have more to give to someone else when I am physically fit. Therein lies the answer to the question of guilt as to the time spent on fitness. After exercising, I have more energy and need less sleep which allows me to have more time to give to others, not less time.

A working woman has to make alot of adjustments. It doesn't matter if we are discussing women who work outside the home or women who are working in the home doing all the cooking and cleaning, preparing the meals for the family, doing the shopping and the errands. Let us not forget that sometimes the hardest work of all is to stay at home and do the housework.

I guess I conqured my guilt a long time ago knowing that I can do more for people if I exercise, because as a result of the exercise I truly am more energetic. If necessary, I might arise at 5 o'clock in the morning to get my exercise in. I am committed now but several years ago I remember driving to my exercise class and never getting out of the car due to my lack of commitment.

I guess you could say my heart was in the right place at last.

As a parent of grown children, I realize that the example a parent sets as a physically fit person is valuable and compensates for the samll amont of time that you are away from the family in your exercise program. The most important thing you can do to assuage your guilt is to truly believe in the value of physical fitness for yourself and others, and to recognize the impact of fitness on generations to come.

Panelists: Samuel M. Fox, III, M.D.

Dr. Samuel M. Fox, III, is the director of the Preventive Cardiology Program and Georgetown University School of Medicine. He is the former chief of the Public Health Service's Heart Disease and Stroke Control Program. Dr. Fox is a medical consultant to the President's Council on Physical Fitness and Sports.

Heart disease is the nation's number one health problem. It is a major cause of loss of energy, enthusiasm and productivity. Industry and insurance pay more for heart disease than even cancer, which is truly the more dreaded disease. Happily there is data that clearly indicte the benefits of physical activity programs in the prevention of heart disease.

There are three points I would like to bring out. High blood pressure is prevalent in American men and women, partically because a great many of our population are inactive and overweight. There is excellent data, most of which is unpublished, which supports the role of a regular physical activity program, in conjunction with weight control and limiting salt intake, in reducing blood pressure. For a long time physicians have recorded anecdotal clinical observations of blood pressure reduction in patients when they become involved in a physical activity program but now there is some good scientific research which supports our observations.

Dr. William Haksell has been one of the pioneers with his colleagues at Stanford studying the influence of exercise on serum cholesterol values. Bill has been involved in some excellent work indicating that athletes who are involved in endurance exercise get a rise in high density lipoproteins (HDL) and a reduction in the low density lipoproteins (LDL). HDL is a fraction within total cholesterol which is considered to be protective relative to the infiltration of the LDLs, or proteins tied in fat molecules that penetrate and form the plaques, and later obstructions in coronary arteries. We have very important evidence of a mechanism whereby increased exercise will prevent the deposition of fatty materials blocking the arteries to the brain, legs and particularly to the heart.

At one time there was some research done which suggested that moderate alcohol consumption would raise HDL levels. The popular lunchtime joke was that if you wanted to protect yourself against heart disease you could drink two beers or run two miles. You can guess what the popular choice would be. Dr. Haskell's group published an article in the New England Journal of Medicine which, unfortunately for some, indicated that social drinking does not raise HDL levels.

I would like to refer you to an excellent study on exercise and varicose veins done at the Physiologic Institute in Stockholm, Sweden. Monarch exercise cycles were put in the back rooms of some of the large department stores in Sweden and the sales clerks who stood behind counters all day, would take a break once or twice a day for fifteen minutes and ride the exercise cycles against moderate resistance. The data indicated that the amount of ankle swelling actually decreased for those people who utilized the exercise breaks. There were less feelings of swelling and aching feet, which may be the result of improved lymphatic drainage. I think this is one of the most important pieces of research that can help men and women understand the benefits of physical activity, which does not necessarily have to be strenuous.

(Comments on workplace environments)

I think the telephone is a wonderful instrument that we all enjoy but we spend far too much time talking on the phone where it would do us a lot of good physically as well as socially to walk down the hall and talk to our colleagues. If you have a piece of paper to deliver, take the opportunity to walk. The boss is not going to give you a hard time because you can look very intent on doing your job. We need to mobilize ourselves. The idea of a standup desk or work platform makes a lot of sense and hasn't been looked at enough.

Panelists: Tenley Albright, M.D.

Dr. Tenley Albright won the Olympic gold medal for figure skating in 1956. Following her success as an athlete she studied medicine at Harvard University and is now in private practice in Boston, Massachusetts. Dr. Albright served on the United States Olympic Committee from 1977-1981 and is a special advisor to the President's Council on Physical Fitness and Sports. Dr. Albright is a member of the board of trustees of the National Fitness Foundation, as well as a member of the board of directors of the United States Fitness Academy.

(Responding to a question about the transition from trained athlete to physician)

I never thought of skating as being for the sake of exercise. When I was accepted into medical school it was with the condition that I would stop competing because the school, I think, thought of it as being a show girl and probably thought I was a fan dancer. I do remember thinking that it might be nice not to have arm muscles. Well by the end of that first year in medical school I noticed that I didn't have muscle definition that I had objected to and I found I missed that.

I do think that the President's Council on Physical Fitness and Sports has done a remarkable job in its program pointing out that no longer should we feel sheepish about doing what we like to do—our recreation and sport. Not only should we do it, but we must and therefore it must be activity we enjoy.

I find myself and other physicians telling patients that they have to exercise, they have to get out there and they have to start a program. But sometimes we forget that can be very discouraging but we need to remember that any kind of movement is important. I remember listening to a psychiatrist who would ask her patients "what would you think about exercising for two minutes on your bed first thing in the morning, could you do that?" They would say, "of course," and it sounds like so little, but these were patients who had a problem with depression. This psychiatrist found that if she could give patients some minimal task at which they could succeed, they would enjoy it and want to do it more and eventually make this a part of their lives. Nothing succeeds like success and we all know how good it feels to move and the more we do the more we want to do. I would vote strongly in favor about not worrying if we don't have a rigid routine but encouraged ourselves, families and patients to move in any way we can.

Panelists: Robert P. Nirschl, M.D.

Dr. Robert P. Nirschl is the medical director of the Virginia Sportsmedicine Institute in Arlington, Virginia. He serves as medical consultant to the President's Council on Physical Fitness and Sports and is on the Sportsmedicine Committee of the United States Tennis Association. Dr. Nirschl is an orthopedic surgeon.

I want to emphasis that although aerobic dance and like activities are extremely popular, overall musculoskeletal conditioning is crucial to a well developed exercise program. Ninety percent of sports and conditioning injuries which need rehabilitation occur to the musculo-skeletal system. If you develop shin splints or heel spurs your aerobics program goes by the wayside in one big hurry.

As I see it, there are three basic stages to an aerobics program. Phase one is: "I hate this, why am I doing this, I'll kill myself, my tongue is hanging out and I will never ever make a mile." In phase one the aerobic capacity is so poor that don't challenge to the musculoskeletal system too much. Phase two is when a physiological steady state is reached and you get to the stage where you can jog about two miles or more. It is the "I kind of like it" phase, the addiction phase and it feels pretty good. If phase two is pushed a bit, then the problems of shin splints and so forth tend to develop. Phase three is what I call real pain, when you start to wonder "how fast can I do this?" I remember seeing a patient once who ruptured his achilles tendon just as he was hitting the tape of a marathon. I asked him what happened. He said, "You know I saw this guy Dr. George Sheehan ahead of me. He must be at least 25 years older than me and I was damned if I was going to let him beat me to the finish line." So the last five yards he sprinted ahead and beat George, but he ruptured his achilles. "That is real pain."

Now I want to address the issue of biomechanics in the workplace. Very often we overlook the importance of proper posture while sitting and the value of well designed office furniture. Take a secretary for example, her chair may be too high or too low, or the table may not be the proper height or the lighting may be poor. In any case she is straining her neck muscles which are a target organ for tension (when the boss puts pressure on her she may develop headackes, continuation of whiplash, anxiety or other related ailments). The point I am stressing is that there are a variety of things you can do to make the workplace more pleasant for your musculoskeletal system.

From a mechanical point of view first of all it is help to move. There are many people who have trouble sitting or standing for a sustained period of time in one place. People who have slipped discs in the lower back are generally more comfortable moving around than sitting. Walking is generally more beneficial than sitting or standing.

The proper biomechanics of sitting by and large depends on an individuals height, strength, posture and so forth. The general principles are: firm back chair, not too high off the ground giving support for the lower extremities and back. The height of the desk and the typewriter table should be adjusted accordingly. Ideally standard issue furniture and fixtures would be individualized but there is of course a limit. Let me illustrate.

American Standard has made toilet seats for who knows how long and they have always been the same height. Now our population has increased in size but the toilet seat has stayed the same, which means we have to squat further which means that our backs, hips and knees are subject to more strain. Would you call up American Standard to ask for a toilet seat of a different size and height? There are unfortunately economic considerations. But you can certainly fix up a comfortable work station for your body at less cost.

Overall, relatively simple alterations in the work station associated with simple but effective strength, endurance and aerobics programs can enhance productivity and minimize fatigue and unpleasantness often associated with occupational activities (Answering the question about muscle toning versus bulking (e.g., is weight work advisable for women?).

Dr. Fox citing the study of store workers in Sweden and bicycle exercise breaks is important not only from the point of view of improved circulation but it also points out that a short exercise break of ten or fifteen minutes can be effective and simple. I think one of the things that has occurred in our society is that we have become bogged down in a lot of mechanical and technical things. Do we really need twenty three Nautilus machines before we can have a first class fitness program? At my clinic we often prescribe simple yet effective exercise program for individuals utilizing isoflex tension core resistence or isotonic small weights.

I don't see any reason why the concepts that have been alluded to can't be expanded to the workplace. You don't need 4,000 bicycles and a big gymnasium and a lot of Nautilus equipment. All you need are a few simple resistance pieces and a few bicycles. The key is to have an employer who understands the value of physical fitness and who will support the implementation of a program. A key element is somebody who knows and understands the concepts of fitness and who can figure out reasonable and obtainable endpoints and goals for individuals. One of the great vaccums in the United States and the world for that matter, is that most people do not define and implement appropriate goals so everything falls apart with an expensive pile of machinery which hereby collects dust.

In reference to the bulking of muscles, adding the concept of sustained activity to the strength training program is a very effective way to get aerobics, strength, and endurance at the same time. If your strength training program is structured correctly, you can have the best of both worlds.

In addition women, because of a lack of male androgen, by and large do not bulk their muscles like men do. It is true however that some women bulk more than others because some women have more androgen production than others from their adrenal glands. If women do strength training or resistance exercises most will tone their muscles beautifully. I have seen many demonstrations of women who have saggy buttocks improving tremendously in a short period of time with consistent work on a Nautilus hip and back machine or doing simple gluteus maximum resistance work.

Overall, relatively simple alterations in the work station associated with simple but effective strength, endurance, and aerobic programs can enhance productivity and minimize fatigue and unpleasantness often associated with occupational activities.

Panelists: Cory SerVaas, M.D.

Dr. Cory SerVaas is the editor and publisher of *The Saturday Evening Post.* She is also president of the Children's Better Health Institute which publishes eight children's health magazines including *Jack and Jill.* Dr. SerVaas is an avid morning runner and tennis player.

Twelve years ago Dennis Burkitt came to Indianapolis to the Indiana School of Medicine and over lunch, told me that a high fiber diet could prevent gall stones, diverticulitis, diverticulosis, cancer of the colon, hemorrhoids, hiatal hernias, appendicitis and a host of other health problems. He was a surgeon in Africa for over thirty years and he never saw appendicitis there unless the person could speak English. He never made a diagnosis of appendicitis if the person couldn't count to ten in English.

At the time I met Dr. Burkitt, high fiber diets did not receive the attention they have now. After talking with Dr. Burkitt I went back to the Saturday Evening Post and wrote down everything he said but I didn't dare put my name on the byline. I also wrote a fiber cookbook back then and it was a big flop; all the other cookbooks we published sold better than my bran and fiber cookbook. But that was twelve years ago and now it is selling like hotcakes.

Dr. Vincent T. DeVita, head of the National Cancer Institute who probably knows more about cancer prevention than anyone, has been eating bran every day since he met Dr. Burkitt the same day I did. Adding bran to food restores much of the fiber which is taken out by processing.

The best advice I can give you is, like Carl Malden of

American Express, "don't leave home without it—your bran that is". I asked Dr. Burkitt how much bran a person needs to take. He said that it varies enormously but take enough to make your stools float, you want a floater not a sinker. Generally two tablespoons will be enough.

Add bran to your family's food. Encourage them to eat cereals for breakfast rather than bacon and eggs and encourage them to try different kinds of high fiber foods. There is enough scientific evidence to conclude that people who eat a low residue diet have more cancer of the colon than people who eat a high fiber diet.

Currently at Indiana University we are studying lysine, which is an amino acid. The findings of the research are very exciting. The head of our dermatology department has found that lysine prevents recurrences of herpes, not the first recurrence but the following ones. Herpes is a ubiquitous virus and is implicated in the sarcoma which is often a complication of AIDS. I have a theory that herpes may be more prevalent in vegetarians or people who do not eat very much meat because they have insufficient intakes of lysine.

If you want to hedge your bets I think high lysine foods should be included in your diet and your children's diet. If you can't find the lysine food that are compatible with your preferences, try high lysine corn. Most of the high lysine corn, which was developed at Purdue University, is fed to animals and has decreased veterinarian bills for farmers.

The best of all worlds would be to subsidize high lysine corn and the wheat-rye hybrid rather than tobacco. We could kill two birds with one stone, providing a high fiber food source to prevent colon cancer and at the same time provide a high lysine food source to control herpes recurrences. This would certainly be a healthier crop to subsidize with our tax money than tobacco.

Panelists: Allan J. Ryan, M.D.

Dr. Allan J. Ryan is the editor-in-chief of *Physician and Sportsmedicine* and secretary general of the International Federation of Sports Medicine. He is a fellow of the American College of Sportsmedicine and has served as president and trustee. Dr. Ryan received his medical degree from Columbia University and is a noted author. He most recently served on the panel of judges for the National Honor Awards.

When I looked at the title, Working Women and Fitness it caused me to think how I would define a working woman. It seems to me that women generally work, whether it is in business and industry or in the home, and I thought to myself I don't know any women who aren't working.

The question is how can we best help working women find the time they need to develop and maintain physical fitness. I was in Japan recently and in every workplace, regardless of the type of business, work begins at 9:00 but all the employees are required to be there at 8:45. Those first fifteen minutes are spent exercising with fellow employees under the direction of their manager or supervisor. Not many companies in this country have programs of that sort, although some provide an opportunity to exercise during the regular work day.

It seems to me that there are some concerns that women have that might help motivate them to begin a life long fitness program. When I attended the AAHPERD meeting in Anaheim, California I heard Dr. Spurgeon discuss his survey of dancers. He compared ballet dancers and modern dancers to see if there were physical difference between them. One important similarity he found in both groups was that although there was not much difference in weight between the groups, two thirds of all the dancers thought they had a weight problem. Dr. Spurgeon thought that was rather surprising. When he finished his talk and asked for questions or comments I said, "Dr. Spurgeon, perhaps you are not aware of it but two thirds of the women in this country feel they have a weight problem." Many women are working towards what they consider the ideal dress size, size six. Some of them are never going to make it. If women would concentrate less on making a certain dress size and think more about developing a state of physical fitness that would be suitable for their age and body size, I think most of them would find they have realized a greater approximation of what they would like to look like, rather than aspiring to be an arbitrary dress size.

(Commenting on office furniture)

I think good furniture for the workplace is important. One of the things I have noticed in my practice, in men and women, is that sitting height in relation to the desk contributes to a common complaint of pain between the shoulder blades. In many cases they are sitting in relation to the desk in such a way that they have to lean forward or backward all the time. Items on the desk which are used frequently such as telephones should be placed in such a way that they can be easily and comfortably reached to decrease fatigue and help to improve a person's overall physical fitness. On the other hand, some of those items can be placed on the other side of the room to encourage movement.

CLINIC SESSION I
Friday, April 6, 1984

Introduction to Running—
Glenn V. Swengros

Glenn V. Swengros is the Director of Federal-State Relations for the President's Council on Physical Fitness and Sports (PCPFS). Mr. Swengros helped develop the Presidential Physical Fitness Award program and played a key role in the establishment of the Association for Fitness in Business (formerly the American Association of Fitness Directors in Business in Industry). He coordinates the PCPFS Regional Physical Fitness and Sports Clinic Program.

Exercise Workout—
Joan Sullivan Morris

Joan Sullivan Morris is chairwoman of the Department of Physical Education at Portland (Oregon) Community College. She received the 1982 National Honor Award and was a recipient of the 1967 U.S. Jaycees—Metropolitan Life Physical Fitness Leadership Award. Ms. Sullivan serves as a clinician for the President's Council on Physical Fitness and Sports.

Awareness and Self Defense—
SA Al Beccaccio and
SA Carolyn Weber, FBI

Special Agent Al Beccaccio is Chief of the Physical Training Unit at the FBI Academy in Quantico, Virginia. He is assisted by Special Agent Carolyn Weber and the FBI Academy Physical Training staff.

AWARENESS AND SELF DEFENSE PRESENTED BY FEDERAL BUREAU OF INVESTIGATION

PERSONAL DEFENSE

Our purpose today is to remind ourselves that no one is immune from rape or attack. Just because we use seat belts to protect ourselves in an auto accident does not mean that we go out planning to have a wreck. Seat belts are just a safety factor in case we do.

Similarly, it is prudent to become aware of ourselves, our society and our individual abilities so that we can avoid the unpleasantness of an attack and adequately defend ourselves if an attack is inevitable. Current estimates indicate that a womans chance of being raped during a 35 year period are about 1 in 10.

So what do we do about this? What is the seat belt we use to protect ourselves from harm? That is what we will discuss today.

PHYSICAL FITNESS

Physical fitness is the basis or foundation we need in order to react to a bodily attack situation. We must know our limitations and practice our skills in order to effectively act/react to an attack. Physical fitness may also provide us with the ability to avoid/escape from a dangerous or potentially dangerous situation.

STANCE is of utmost importance. Body weight should be distributed evenly to provide for quick movement and reaction.

Similarly, BALANCE will enable us to command our body movements and to act/react effectively. Our attire will often have a bearing on our balance just as it will on other aspects of our physical capabilities.

AGILITY and FLEXIBILITY will determine our ability to perform certain movements and help us to avoid injury.

STRENGTH helps determine our ability to exert force and combined with our other physical abilities, perhaps our ability to escape and/or deliver effective blows to an assailant.

ENDURANCE has a direct bearing on our ability to sustain movement and strength.

And all of these elements combine to provide us with our SURVIVABILITY quotient.

AWARENESS AND MENTAL CONDITIONING

Many times we go about our daily activities taking no notice of our surroundings. We are distracted or deep in thought and so become potential targets of attack. Muggers, rapists, purse snatchers, etc., look for "victims" and the unaware individual announces her victim potential.

Instead, look to your right and left. Notice your surroundings. What in your environment can you use for protection? What is dangerous? What and where are your potential environmental weapons? Is there a police box or taxi phone nearby? Keep in mind that you will be safer walking against traffic and close to the curb.

Pay attention to your intuition. Back away from situations that say "CAUTION" and remember that everyone has vulnerable areas, including your attacker. Make decisions regarding how you will react to any given situation. Will your decision be to stop and talk or will you run and/or fight? Know why you will react in any of these ways and provide yourself with the reasons for your actions/reactions. Then when the time comes that you must draw upon your resources, you will be better able to do so without undue trauma.

COMMON SENSE

Common sense helps us recognize trouble before it happens and to avoid potentially dangerous situations. Common sense tells us to avoid dark alleys and deserted streets and not to enter an elevator with a suspicious individual. Common sense tells us to assess our environment and to make logical and appropriate decisions regarding our safety. For instance, when someone comes to our door we should check their ID *and* verify them and the purpose of their visit by placing a call to the company or agency they represent.

CONFIDENCE

CONFIDENCE is that allusive attitude we establish through becoming familiar with our abilities and limitations. Confidence comes from practice and knowing what we can and can't do. For instance, it does no good at all to practice certain techniques if we will not be able to use those techniques in an actual situation. An example of this would be eye gouging, a very effective technique in deterring or escaping from an attacker. But will you really be able to use this technique in an actual situation? Many people cannot because they find this technique too personally offensive. So, take a personal inventory to determine what you can mentally and physically handle and work on upgrading those skills.

ASSERTIVENESS

An assertive posture and gait tells potential attackers that you are not an easy target. Assertiveness also enables us to yell rather than scream and to act and react in a positive manner. An assertive individual is a powerful individual who is capable of avoiding dangerous situations and circumstances because of her bearing and confidence. Give the impression you would fight rather than quit.

CLOTHING

Be aware of the restrictions imposed by your clothing. It's not enough to recognize the fact that it is difficult to run and/or fight in high heels and straight skirts. Practice in these clothes and adjust your behavior to accomodate for the physical restrictions certain outfits may impose. Practice throwing a punch in your business suit. Can you do it or does your jacket bind? Will you risk ruining an expensive outfit to fight off an attacker? If not, perhaps you should take a taxi to your destination.

Is your clothing provocative? Will the repairman decide you're "asking for it." How about grocery store clerks, gas station attendants and other individuals with whom you may come in contact? Perhaps caution and common sense will dictate that you save provocative outfits for your home.

And what about foul weather gear? Winter coats are bulky and limit movement and many hats limit our vision and environmental awareness. Know the limitations dictated by your attire.

Hold your purse securely in front of your body. If you have a clutch bag, tuck it high under your arm with the opening toward the ground. That way, you can dump all your belongings and no purse snatcher is going to scour the ground for your belongings.

JEWLERY AND ACCESSORIES

Be aware that theives are on the look out for expensive jewlery. Turn your rings around so the stones face your palm; cover expensive watches; tuck necklaces inside your clothing. And, at home, keep valuables in a secure place.

Remember, too, that scarves can be used to pull you off balance and as a weapon of strangulation.

RISK REDUCTION TECHNIQUES

Be aware of the risks you might encounter as part and parcel of your chosen lifestyle. Know how to reduce these risks!

AT HOME:

Lock your doors even while you are in the house, emptying the trash, going for walks, etc.

Check out repairmen. Call their office to verify their identity. Have an escort present while they are in the house (or office).

Secure your valuables and keep them out of sight.

If you live in an apartment (or are staying at a motel) beware of master keys. Set dead bolts and use travel and keyless locks for security.

Use only your first initial and last name for telephone and other listings.

AUTO/TRAVEL RELATED:

Keep your gas tank full and your auto in good running condition.

Park in lighted areas.

Give only your ignition key to lot attendants. Lock the glove box and secure credit cards and any other valuable items/information.

Use alternate routes and vary your routines. Check for "safe" areas enroute.

Have your car/door keys out and ready well before you need them. They will be available for quick entry and may even be used as a weapon.

Circle your car before you enter. Check the tires and determine that no one is hiding inside.

Get in your car with your packages. Don't take time to place them in the car before you enter.

Lock all your car doors. If someone does slide in, exit from the drivers side at your first safe opportunity.

Travel in a group and carpool. If you can't or don't carpool, have one driver drop each of the others at their cars rather than everyone walking alone.

Stay in well lighted and populated areas.

ENVIRONMENTAL WEAPONS

Such weapons include items from your purse or readily available in your home and office. Ball point pens can be used to slash and puncture and are easily held in the hand. Brushes are good for jabbing into various parts of the body and eyes. Keys can be held in the fist to extend between the fingers and can be very damaging to an attacker. The edge of a book or rolled magazine can be used to deliver a hefty blow and a coat hanger can be used to slash exposed portions of the face and body. Just remember that these weapons are basically a distraction technique which will enable you to move to a position of advantage and escape.

DEFENSE TECHNIQUES

Keep in mind that you want to distract an attacker so that you can move to a position of advantage and escape. Also keep in mind that the larger and heavier individual will almost always win a confrontation. Your judo, karate and other training will help you as far as confidence and knowledge but it will not make up for weight and size differences.

Yell, don't scream. Yelling "Get Away!" or making a loud noise to distract or deliver a blow is an assertive action. Screaming is associated with fear and submission.

Practice the following so that they become second nature:

BALANCE: Feet apart, body poised for action with knees and elbows flexed. Maintain center of gravity.

BODY MECHANICS: Use all of your muscles.

USE STRENGTH AGAINST WEAKNESS.

USE YOUR ASSAILANTS WEIGHT AND MOMENTUM AGAINST HIM.

SURPRISE AND SPEED.

You also have personal body weapons that you can use effectively. These include:

HEAD: Forehead, back of head and teeth. Don't be afraid to bite!

HANDS: Fingers, fist (front and back), edge of hand, heel of palm.

ELBOWS AND KNEES: Good for hard jabs and blows.

FEET: High heels can be used to deliver devestating blows! The side of the foot is also an effective weapon.

Your attacker has many vulnerable areas. . . .and so do you! These include:

EYES: Gouging is a very effective technique but you must decide if you can do it. Many people find it difficult and/or offensive to attack the eyes.

HAIR: Use your entire hand and with your fingers spread, grasp from the scalp.

NOSE: A blow to the nose with the palm or side of the hand can severely injure an individual.

EARS: "Boxing" the ears can upset balance and may even break the ear drum.

THROAT: A blow to the base of the throat may provide you with a distraction and chance to escape.

GROIN: This is usually an unprotected and vulnerable area. It is better to aim for the groin than the upper abdominal area.

KNEES: Remember Joe Nameth!

SHINS: A hard kick to the shin area may distract your attacker so that you can escape.

INSTEP: A smashing blow to the instep is debilitating.

FINGERS: Bend them against the joint.

ANYTHING YOU CAN BITE!

When an attacker grabs you, react immediately with defensive tactics.

ARM GRAB: Hit or kick. Pull your arm away and run. Practice specific techniques to release/escape from this grab.

GRAB FROM BEHIND: If your attackers arms are around your waist, move to the side and smash his testicles. If his hands are around your throat, lower your chin so you don't choak. Smash his foot, grab his testicles and practice specific techniques.

GRAB FROM BACK, HAND ACROSS FACE: Bite him! Practice defensive tactics technqiues.

FRONT HUG GRAB: Bite his neck and practice other defense moves.

NECK GRAB: Eye jab, throat jab and underarm jab distract to permit you to turn. Smash his groin and instep.

Sometimes you may decide that it is not in your best interest to fight with an attacker. If so (or if you do fight), get a good description. What is his race, age, height and weight compared to knowns (e.g., did the top of your head come to his chin, etc.), clothing, hair color and style? All of these may alter but there are three things that almost never do. These are his glasses, jewlery and shoes.

If you are a victim, report to the police immediately. Hopefully though, you will be able to avoid and/or extracate yourself from situations that are potentially dangerous and the confidence you gain through practice and a thorough and realistic knowledge of your skills, assets and limitations will save you from trauma.

Compiled by SA Richard L. Weber and SA Carolyn L. Weber.

Sources include:

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CLINIC SESSIONS II

Friday, April 6, 1984

Figure & Fitness with Weight Training

Richard O. Keelor, Ph.D.

Dr. Richard O. Keelor is president and chief executive officer of Living Well of America. He has received national awards for his leadership contributions to health and fitness including the 1983 U.S. Jaycees Healthy American Fitness Leader Award. Dr. Keelor is a past president of the Cambell's Institute for Health and Fitness and former PCPFS director of program development. Currently he serves as special advisor to the PCPFS.

Pre- and Post-Natal Exercise

Karen Blackwell, Coordinator

Karen Blackwell is the choreographer and coordinator of the Metropolitan Washington, DC, Pre- and Post-Natal Program. She is Director of Health, Physical Education and Aquatics for the Arlington (Virginia) YMCA.

Fitness Motivation

Patti Holmes

Patti Holmes is the associate director of Recreational Sports Miami (Ohio) University. She has lectured on the motivational aspects of fitness for Presidential Sports/Fitness Festivals. She is an advisor and consultant to the U.S. Army Morale and Support Services. Ms. Holmes received her master's degree from the University of Dayton.

FIGURE AND FITNESS WITH WEIGHT TRAINING

Richard O. Keelor, Ph.D.

One of the charateristics of fitness which is confusing as much as anything else is the strength component—the importance of muscle mass and its relationship to how you look. How you look often dictates how you feel about yourself. Over and over again as I have travelled around the country and listened to those who lecture on physical fitness, I have found that their major focus has been endurance activity. Flexibility is probably as little discussed as strength work is, but the strength component is the area I wish to cover and is what will help you maintain your physique and figure better than almost any other component.

There are really three major factors in how you look—one is muscle tone or muscle shape, another is percent body fat, and finally heredity. Now aerobics can help burn a number of calories in the course of a workout. Activities such as running, walking, cycling or swimming. We know that these activities enhance the cardiovascular system, but you can have your cake and eat it too, literally, as you combine high repetition, low resistance strength work in a comprehensive strength program. My hope is that I can give you a specific program that you can implement when you go home. You can do it without expensive gym equipment. You can do it with light dumbells or wrist or ankle weights and incorporate it into your daily exercise routine at least three to four times a week to build that muscle mass.

Dr. Guy Reiff talked about the statistics with respect to the strength component of young female subjects in schools. One of the things we know about the young American girl is that she is undermuscled when she goes to school. She doesn't get any strength training when she is there, and so she enters her adult life undermuscled and without the skills and understanding to do anything about it. The challenge for me is to communicate something as simple as I am going to demonstrate and the challenge for you is to see that your public schools have it, and every young girl has an opportunity to develop her strength and every child in public school has the basic knowledge of how to maintain their skeletal muscle system.

I am going to remind you of the two factors you have control over when you talk about your figure. Figure enhancement is a function of muscle tone and shape and the only way to get muscle tone and shape is through resistance work. When you run you get resistance to your legs and buttocks and a little bit to your upper body but it is minimal. If you are a swimmer you are probably not going to get quite a lot of muscular strength, that is the one endurance activity exception. There are ways we can augment walking, for example with wrist weights to get some strength work but generally in an endurance activity you don't generate much strength. We have to specifically do strength activities, that are called resistance activites. This means you challenge the muscles against some force whether it is your own body weight as in calisthenics when you are doing pushups and situps, whether it is against a machine, or free weights. There is not that much difference between weight machines. Just remember you get what you pay for. You can use something like dumbbells, it is practical, it is inexpensive, you can do it in the privacy of your own home.

The next point of course is fat reduction. I used to be 260 pounds. What happened to all that body mass, about 80 pounds? The principle of high repetition, low resistance work combined with endurance work and moderate diet changes brought it down and kept it down. But fat reduction is a problem for most people. They may loose alot of fat but they still don't like the way they look. They probably look drawn and haggard, they might have poor skinny arms; there isn't any musculature underneath the fat. So when we get rid of that layer of fat we want to have a shapely muscle. Not only will that muscle look better, it will also be more functional, which, as some of the other speakers have suggested, has a lot to do with digestion, respiration, posture, and an awful lot to do with your self image. Dr. Smith talked about the atrophy of muscle mass, and loss of work capacity with age. There is good research that suggests muscle mass loss is as much related to an inactive lifestyle than the ravages of the years. The good news is that in later years you are able to maintain your muscle mass at a much lower level of atrophy than most people through strength development and maintenance.

When we discuss fat reduction we most often talk about diet but the best diet is no diet; rather a new set of exercise and eating behaviors. Everybody worries about calories—that is not really the key. The key is to look at the other side of the equation because the calories burned during a workout is very significant. Not only are you burning calories, thereby reducing the calories stored but you also develop what is called an overhead calorie burn. The lean body tissue is active tissue and is working for you all the time. Right now as you sit your body is burning calories, some of you have a well developed lean musculature, it is burning more calories over a 24 hour period than the sedentary person sitting next to you who has less muscle mass with which to burn calories.

Let's take the scenario of the typical young lady who graduates from high school: never had any strength work, doesn't know anything about muscular strength and endurance work, goes to the university and learns nothing more than what little she acquired in grade school, enters a professional career, and now, at age 35, sees the slow creeping fat and she must constantly fight and struggle to keep her weight down. The AMA just published out a book called Exercise and Diet: Synergism to Health Maintenance. They pointed out that in the U.S., the average woman's basal metabolism is lower than the USDA recommended caloric ingestion—in other words, it requires self-imposed starvation to keep the body weight at a level that keeps the individual happy about how they look. Of course they are getting so few calories that they don't receive the right nutrients; therefore, it is self-imposed malnutrition. I suspect that for so many people who feel chronically tired all day are people who are starving themselves. The real answer is to exercise in order that they eat more calories but will burn more. And, strength work is essential.

As we build up lean body tissue we increase the calories burned at rest. If you want to generate a greater caloric burn, then you must do strength work. I guarantee that if you engage in a strength program three times a week, combining strength work with endurance work you will have a plan for a lifetime of proper body weight. Not only that, but when the fat comes off, beneath everything else is the "Wonder Woman" God intended.

Let's go now to some slides and as we do so, I would like to introduce to you a personal associate whom I have been privileged to know for the last several years. She is a lady with a most interesting history. Like many women at age 25 with four children, she recognized that she had to do something to maintain her health and began exercising. She enjoyed it so much that she did more than the average person in strength development. She became a bodybuilder, if you will, in the good old days when there were no steroids or anything of the kind. As with many American women today, she raised her children giving them the spirit of health and fitness. Now she is 52 years old, a grandmother eight times, will you please greet Doris Barrilleaux.

We are going to give you a basic weight training program, using six pound dumbbells. I want to first show you the slide and then Doris will demonstrate. The first exercise is nothing more than an alternate dumbbell press. We might do as many as 30 or 40 reps. This exercise is emphasizing the upper back, shoulder and deltoid area. The idea of this exercise is light rhythmic work. You may do it in front of the TV or to music in order to spice it up and make it fun.

The next exercise is a side lateral, working the muscle in the back which is particularly important for females because their chest muscles tend to be very tight. We want to work the upper back. You can see that the deltoids and upper back area and the shoulders are getting a tremendous workout.

Another exercise for the upper back is the Bent Over Row. This is a high repetition exercise. Notice the slight bend in the knees so you don't compromise the lower back and cause any pain.

Chest exercises have been grossly over sold as a way to develop the bust. There is no amount of exercise that is going to develop the bust. The bust is generally fat and glandular tissue, not muscular. If you want to enhance your personal appearance you do back work and stretch the chest muscles. That holds the shoulders back and elevates the rib cage to enhance your figure as much as the good Lord wanted it to be enhanced. These are high repetition exercises, not low reps. We aren't trying to develop muscular strength because, in most cases, women are too tight in the chest. That's where they get the round shouldered back. Most of you are muscle bound in the chest. Always use a full range of motion. Do 15 to 20 repetitions with a light weight.

A very important area is in the rib cage, the intercostal muscles in the rib cage become tight with age. The intercostals as Dr. Smith pointed out earlier, are vital to respiration, posture and everything else. So we must all do exercises to stretch out the intercostals in order that we have maximum respiration and posture.

Now, moving to the waist we are going to start off with oblique work. Remember the waist has the rectus abdominus and the internal and external obliques on the side so we like to give those a good workout as well. We do this by simply doing Tick Tocks with the weight in one hand and switch off to the other hand. This is a high repetition exercise, doing 20 to 30 on each side. I warn you to start off slowly, as you should with any exercise, otherwise muscle soreness will drive you crazy.

A new kind of sit-up, everyone should know how to do is the crunch. We are no longer doing sit-ups with straight legs, in case you didn't know. We like to isolate the hip flexors. So by putting her legs up on the bench she is really placing all the load on her rectus abdominus. Those are the muscles right in front of your tummy and notice that she is just curling her head up. Her chin first comes to her sternum, as she curls up she is not jerking her arms, she is taking all the load on her tummy.

From the stomach, shoulders and chest we are going to go to the arms. This is the seated dumbbell curl. The reason we sit down is that we like to isolate muscles. When you stand up sometimes and get a rhythm going, and start to use your leg muscles. This catches the front of the arm. The real areas of trouble for so many people, particularly for women, because there is a tendency for fat deposits to go in special places, are the thighs, the buttocks and the arms. But the arms are a big problem for a lot of people so we do a lot of high repetition bicep work. The elbow placement is very important. You want that elbow right against your hip in order to not swing those weights because we want the biceps to do all the work.

For the triceps, the back of the arm, we do a seated tricep extension. Notice her elbows are next to her head, extended overhead and then returns to the beginning position. Again, high repetition work, 15 to 20 repetitions with low resistance. This will help to tighten up and tone up the back of the arm.

For your quadriceps or front of your legs, we recommend a half squat. Notice that her legs are parallel with the ground. This will tighten up the buttocks and the tops of the thighs, building strength and endurance as well as muscular tone. Remember to stop at a parallel position to the floor, don't do a full squat. Notice that her heels are elevated slightly. This throws the center of gravity forward over her quadriceps and the tops of her thighs.

Another good leg exercise is called the Leg Thrust. This will get not only the gluts but also the adductors on the inside and the quadriceps—an excellent exercise.

I would like to show you a routine done with hand or wrist weights. The advantage to this particular set of exercises is that you can literally have your cake and eat it too. I like to use a stationary bicycle. I recommend it to a lot of folks because you can do it indoors, you don't have to worry about the muggers or the dark or anything else. It does a tremendous job of developing the thighs and gives you a good cardiovascular workout.

I like to use light dumbbells because I can get an upper body workout as well. One of the things we hear over and over about endurance work is that you don't get any strength development. But as I mentioned earlier,you can use these light weigts while you ride your bike and have your cake and eat it too. I am going to give you a little demonstration.

Start out slowly, raising the body temperature to get your system ready for move vigorous work, then we start our strength work. I am getting a tremendous cardiovascular overload as I start to do some of the exercises we domonstrated before. I can do triceps work, biceps work, alternate dumbbell raises, the side laterals. As I start to get tired I go back to curls and I work out continuously for 25 minutes. If I become really tired I drop down on the handle bars maintaining a nice rhythmic action with my legs and do pushups against the bars. I can also do arms circles. I finish up a cooldown so that I am not stopping too quickly. Finally I get off and do some stretching and I have had a good workout. That can be accomplished in your own home with nothing more than dumbbells or wrist weights.

This slide was prepared for one of our instructional books at Campbell's and it shows a lady using resistance doing normal chores around her home. She has wrist weights and as she actually goes through the motions of putting her groceries away, vacuuming or whatever else, she is getting the training effect. You may recall that Dr. Lamb said one of the things we needed to do was exercise at regular intervals throughout the day. What better way to do it than with wrist weights.

I want to talk finally about a few things that you need to look for in your physical education classes because it is much different in public schools. They have a lot of equipment that you can't afford. Every school ought to have a well equipped weight room. It doesn't have to be expensive, you can build a lot of this equipment with coffee cans poured with cement with a little lead pipe holding it together.

Here is a picture of a woman doing a sit-up properly. One, her knees are bent. Secondly she is not coming up to a full curl position.

The leg extension machine, a great little piece of equipment, shows how to maintain the quadriceps. The thing that particularly impresses me is that this lady is facing away from the machine. Sometimes the machine can inhibit our physique or figure because we are always using the same range of motion locked into the same mechanism. You have to use those machines intelligently. For example being sure you have the right bench for the bench press.

Here is a picture of a woman using the free weights. Whenever we use the free weights we want to make sure we are spotted properly. It is amazing what young women can do when trained properly. Of course all of it should be done in an atmosphere of fun and relaxation to help us enjoy the fun of fitness and strength.

I hope that you have picked up something you can do in your own exercise program. Go down and buy yourself a pair of inexpensive dumbbells or soft weights and a set of ankle weights. Start off with the dumbbell press, standing side laterals, bent over side laterals. Remember, work on your upper back. Don't forget about the chest musculature, stretch those intercostals. Do your situps properly, when that fat comes off you will have a nice flat tummy. Work on your legs and buttocks with the half squat and the leg thrust. One exercise I want to mention is the neck. The muscles of the neck, and there are many, are rotators, extensors and flexors and you can get those by simple using your hands for resistance.

A good little book to use is the one put out by Runner's World called Weight Training. Frank Zane and his wife have an excellent book.

I recommend light weight, somewhere between one and ten pounds but high repetitions. That is called plyometrics. Remember, strength work is hard work. Another thing to remember about strength work is to begin slowly because muscle soreness can really be a problem.

Let me refer you to some community resources. Number one, the YMCA and YWCA, Jewish Community Centers, recreation programs, adult education classes. Join a health club. Be sure that they give you a program specifically designed for you and that they don't just run you loose on the machines and say do it like everyone else. Remember you may loose weight and the first place you will lose it will be in your face and your neck, the last places will be the hips, thighs and arms, but stick with it, do your strength work and enjoy the results.

FITNESS MOTIVATION

Patti Holmes

The continuous dedication that one gives to any exercise or activity is extremely dependent on individual motivation. In many cases, the success of an exercise program is more influenced by psychological factors than by actual physical capabilities. Program motivation is extremely critical if one is to continue participation for a lifetime in any exercise or fitness program.

Proper motivation includes a variety of factors which can make your program happen. Two essential ingredients of motivation are desire and a positive mental attitude.

The desire you have to maintain an exercise program is the fuel you need to stay on course. Desire is the catalyst. But desire is rooted in purpose. Therefore in order to keep on with your program a clearly stated purpose must be the foundation.

A positive mental attitude is critical to any exercise program. If you have a positive attitude about yourself and your body, you become convinced of the benefits of exercise. Knowing those benefits and how your self-image, and your body's fitness level can be enhanced by the subsequent results of your program, this alone can help keep you on track.

Creatively alive individuals are those who experience life to the fullest. They rejoice in the sheer magic of being alive. Engaging in an ongoing exercise program is an expression of your sincere desire to be totally alive. Appreciation of one's self means an appreciation of your body and its shape. If you have desire to improve your fitness level and understand why, and couple that with a positive mental attitude, you are on your way. The essence though of maintaining your program is a belief in one's self. Believing in yourself and that you are capable of making good choices to enhance your lifestyle will ultimately result in a more positive you.

Desire, a positive mental attitude, and a belief in one's self are fitness motivation factors which will assist you in reaching a level of success which will be both satisfying and motivating in itself.

EVENING DEMONSTRATIONS
Friday, April 6, 1985

HEPsters (Health and Exercise Project)

Deborah DiGilio, Program Director
George Mason University, Fairfax, VA

Fitness Routine with Ankle and Hand Weights

Paige di Picciotto, Director
The Fitness Studio, Washington, DC

Jazzercise

Colette de Grasse, Area Manager
Washington Metropolitan Area

EARLY MORNING ACTIVITIES

Saturday, April 7, 1984

CELEBRITY 5K RUN-WALK

Directed by Shirley Pate and Henley Roughton, Runhers Unlimited, Alexandria, VA

FLEXERCISE WORKOUT

Susie Timken, Leader, assisted by John Thompson, Downtown YMCA, Canton, OH

Susie Timken is active in many civic and private organizations in Canton, Ohio. She has served on the Boards of Trustees of the YWCA and is Secretary of the National Council on Alcholism. Mrs. Timken is a special advisor to the President's Council on Physical Fitness and Sports.

PRESENTATION OF PAPERS

Saturday, April 7, 1984

Moderator: John C. Holland, P.E.D.

Dr. John Holland is the director of health/fitness at the National Defense University at Fort Lesley J. McNair in Washington, DC. He is an adjunct professor at American University and also teaches at the Uniformed Services University of Health Sciences. Dr. Holland is the chairman of the Federal Interagency Health/Fitness Council. He received his doctorate degree from Indiana University and his post-doctorate from The Cooper University.

Presenters: Major Dennis Kowal, USA
Phyllis Sharlin, MSW
Bob Karch, Ed.D.

WOMEN ON THE FAST TRACK– A CASE OF MIND OVER MASS

Presenters: Major Dennis M. Kowal, U.S.A.

Major Dennis Kowal is presently a research analyst for the Policy Review Group for Women in the Army and Health Promotion Program Coordinator. He is an adjust professor at American University where he has taught exercise physiology. Major Kowal has previously served as a research psychologist and drug abuse/human relations officer for the U.S. Army.

The purpose of this presentation is to emphasize that the physiological response of women to physical training and exercise is identical to that of men. It should be obvious that at the cellular level the mechanism that controls most of the biological processes responsible for the physical performance of both sexes is identical. Differences in performance then reflect primarily the differences in muscle mass, energy systems or substrate. Therefore, differences in performance becomes a matter of the magnitude of these components rather than one of the mechanism.

If we accept the preceding premise we are confronted by the fact that the differences between men and women's performances is still about 10% greater than would be expected based solely on these physiological differences. Therefore, this disparity must be due to some other as yet unmeasured factor. This leads to the speculation that cognitive or mental factors may play a major role in women's capacity. However, before we pursue this topic, let's review some of the major concepts that govern our understanding about women's performance capacity.

1. Women have an overall endurance capacity that is approximately 80% that of men.
2. Performance differences can be largely accounted for by differences in body size, muscle mass and blood volume.
3. Women have about ⅔ the strength of men, however, the leg muscles are relatively stronger and the upper body or arms are relatively weaker than men's.
4. Women's muscles do not seem to increase in size or strength as much as men, but this appears to be due to the higher level of anabolic steroids in men.

With all this in mind, we must also consider the fact that women have been brainwashed for years by society, both directly and insidiously, to stay away from intense physical exercise. Now they are going to have to play catch-up, but the prospects are encouraging that in the near future the performance gap that presently exists will be reduced to the physiological level we have just discussed.

There are some nagging bits of misinformation I would like to discuss that still preclude some women from achieving their own physical potential. This misinformation largely revolves around the belief that by exercising women will loose their feminity and/or be more susceptible to injury. This is all nonsense! Sure, you may increase muscle mass and tone, but this certainly does not compromise your feminity. Likewise, when you participate in vigorous exercise, you run a risk of injury; but that risk is there for everyone and women only need to be sensible and cautious regarding the intensity and rigor of their own fitness level or exercise experience. Realistically, some women may be very well suited for long distance running. This seems to be due to their capability to convert body fat into usuable energy. This is highly desirable as an asset for long distance runners.

I also believe that women have an opportunity to transcend their body's limitations by utilizing their mental focus to affect their body's ability to perform. This can be accomplished through the techniques of mental imagery or visualization since there is a link between the body and the mind. But establishing this connection has been the domain of the individual who was willing to push themselves into this transcendent state; however, it is not the exclusive domain of the elite athlete. But it is essential if anyone is to achieve their full physical potential. I don't think that I'm overstating the case when I say that exercise that is regular and sustained has the capability to unlock the inner-power of the body and transform the self, their performance and the very personality of the individual—to literally transcend the previous boundries we have set for ourselves.

The reason this is so germain to women is that they have been deprived of this opportunity for so long. They have to get over the fear of "being good" or being physically confident. The one thing that I've noticed about women who embark on an endurance training program is that they don't know how to breathe. I mean the deep diaphramatic breathing necessary to use the entire respiratory capacity to increase the $0_2/CO_2$ exchange and the efficiency of their entire cardiovascular system. This sounds almost too simple, but most women when they are challenged during exercise begin to breathe rapidly and shallowly and begin to feel dizzy and frighten themselves. This can be easily rectified by practicing deep breathing exercises. It may be coincidence, but these same deep breathing exercises I use in treatment to help people release themselves from the grip of anxiety and self-doubt and achieve the full potential of their emotional and mental selves.

Once women are able to release the full physical and mental potential that is available to them, they will begin to "go with the flow" and discover the pleasure of exercise for its own sake, and the unknown pleasure of becoming focused within themselves. This focusing of our resource is an experience that most women never have unless they have pushed themselves to the limit and found themselves worthy.

However, a word of caution. Be realistic about your level of activity. There must be a reasonable match between your present ability and the intensity and duration of your training. It is certainly true that "no pain no gain," but "too much too fast" can result in your becoming a dropout due to injury. So don't program yourself for failure by too much too soon.

Increased work capacity is a product of not only a physiological adaptation, but also a psychological one—and the latter may determine the magnitude of the physiological performance change.

EXERCISE AS TREATMENT FOR DEPRESSION

Presenters: Phillis Sharlin

Phyllis Sharlin received her Master's of Social Work from Catholic University. Mrs. Sharlin is with the Family Services Division of the Prince George's County Health Department and in private practice. She served her internships at Catholic University Counseling Center and St. Elizabeth's Hospital, Washington, DC.

Depression is perhaps the most common disease of our age. It is becoming increasingly evident that physical exercise elevates the mood and relieves depression. Many people have already discovered that aerobic exercise (running, swimming) makes them feel better, and this author believes that some people successfully "self-medicate" for their depression or mood swings, with exercise.

The author, a psychiatric social worker in a family agency, believes that psychotherapists should encourage many of their patients to exercise, because of the psychological benefits (running farther than you did yesterday provides a sense of mastery to combat feelings of helplessness and hopelessness) and the biochemical benefits (endorphins released in the brain after aerobic exercise are thought to elevate the mood). Psychotherapists themselves should set an example for their patients by remaining physically fit. And finally, because women suffer from depression in larger numbers than men, women especially should be encouraged to develop an exercise program. The best resource in maintaining mental health is the person herself.

Presenters: Dr. Robert Karch, Ed.D.

Dr. Robert Karch is the founding director of the National Center for Health/Fitness at American University in Washington, DC. He developed the master of science program in health and fitness at American University which combines relative courses in business, arts and science. Dr. Karch was former wrestling coach and All-American wrestler at the University of Maryland. The topic of his presentation is "Health and Fitness for Women: some observations."

Being one of the last speakers at this national conference puts me in somewhat of a difficult situation. If you have listened closely over the past three days to the many speakers who have presented you would now know, if you didn't before you came, that women are far more intelligent, stronger, able to endure more stress (both physically and psychologically) and better communicators than most people have given them credit for being. Please be assured that if I had spoken first I would have told you all of these things in great detail.

Seriously, I'm very pleased to have this opportunity to share briefly with you some of my personal views on the role that women have played in the development and leadership of health/fitness programs in this country.

Through my observations of the development of health/fitness programs in both the public and private sector, it has become abundantly obvious to me that it has been women, more so than men, who have led this tremendous fitness renaissance over the past ten to fifteen years. Coincidentally, if not ironically, your leadership took place during the same time period when so much attention was focused on women's rights, women's sports and Title IX, and your truly outstanding work in the fitness movement has pretty much gone unnoticed. The women fitness leaders of this country, many of whom are at this conference today, have systematically, effectively, and quietly brought about a very significant change in the health attitudes and habits of millions of people in a major portion of the world, and for that you all deserve a great deal of credit, admiration and thanks.

Today, if one were to look closely at any fitness program, be it an Army base in Heidelburg, West Germany, a corporate center in New York City, a YMCA program in Washington, D.C., an elementary school program in Dallas, Texas, or a community-based exercise program in any community, you will quickly see that these programs are primarily being carried out by women. True, in many cases women are not the directors of such programs, although that is changing, but upon closer examination it becomes very clear as to who is delivering the programs, who is on the floor going face to face with literally the millions of people who want to make sound exercise a part of their lifestyle. In most cases you are going to find a high energy, very talented and very fit woman. And I might add with respect to program directorships that people are often surprised to learn that almost sixty percent of the students enrolled in our Master of Science Program in Health/Fitness Management at The American University, are women. I'm very pleased to report that the larger number of women who have graduated from our Program have gotten Directorship positions and have been warmly received by major corporations and organizations.

While I commend you for all that you women have done, I would be remiss if I did not remind you that there is *still a lot to be done*. Thus I strongly encourage and challenge you to continue to utilize your energy, creativeness and intelligence to further the whole cause of health/fitness. For as you know, we are only at the beginning. Thus it is important that we all—women and men alike—continue to develop our skills and strive to find answers to the many questions that remain, while we continue to share our ideas and knowledge with each other. Furthermore, we all have a responsibility to assist in the training and development of those who will be the health/fitness leaders of tomorrow. And finally, we all must strive to increase our ability to communicate scientifically sound and safe information to those we serve.

In the remaining two minutes that I have, I would like to leave you with one observation that may be a bit sexist but hopefully thought-provoking. As a result of getting women involved in a variety of exercise programs, you health fitness leaders have helped many millions of women increase the muscle integrity and physiological efficiency of their bodies. However, at the same time we have seen the advertising divisions of the alcohol and tobacco industries exploit the newfound physically active lifestyles of women for the purpose of selling their products. Think about it! Take smoking, for example. Have you ever seen an unattractive, overweight, apparently unhealthy woman in a cigarette advertisement? No, you haven't! In fact, to the contrary. What we see are women being directly identified with the very type of physically active lifestyle that you as health/fitness leaders promote every day—swimming, dancing, skiing, surfing, etc. That part is good, but what is not so good is the fact that these pictures often both overtly and covertly tie this type of activity to smoking. I ask you—does this type of exploitation of women and their newfound lifestyles have anything to do with the fact that teenage girls are the only segment of our population where we still have significant increase in smoking? Does this type of exploitation have any causal relationship with the fact that this year lung cancer has surpassed breast cancer as the leading cause of cancer death in women? While these questions re very simple, we all know that the answers are very complex.

However, the point is this—as health/fitness leaders, if you are going to be effective in your profession you must be capable of recognizing and dealing with *all* of the variables that have a very specific influence on the people you are trying to help. This is a big challenge but you have met big challenges in the past, and I believe that as health/fitness leaders you are well prepared to accept the tasks that lie ahead.

I'm deeply honored to have had this opportunity to talk with you today, and if I can assist any of you in your roles as health/fitness leaders, please don't hesitate to contact me as I sincerely want to help in any way I can.

TURNAROUND WORKSHOP

Saturday, April 7, 1984

Presented by Dr. Richard O. Keelor, Jeannie Crane and Lauve Metcalfe

The Turnaround℠ Workshop

New Directions in Eating and Exercise

A Campbell Soup Company Program

The TURNAROUND Workshop, a program of Campbell's Institute for Health and Fitness, focuses on ways to fit sensible eating and exercise into a life packed with work, professional organizations, classes or family responsibilities. Participants learn ways to turn their lives around for a healthier, happier, more active lifestyle. The workshop keys on three essential elements—behavioral change, nutrition and exercise—for lasting fitness and optimum health. Emphasizing behavior modification, The TURNAROUND Workshop demonstrates how to fit sensible eating and exercise into everyday life.

THE NATIONAL FITNESS TEST

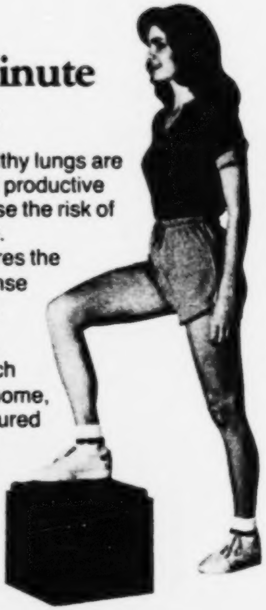
Saturday, April 7, 1984

"Take the test America!"

The National Fitness Test, a pilot project of the National Fitness Foundation (NFF), was administered for the first time at the conference in cooperation with Bonne Bell, Inc. Participants took the five-part test and compared their fitness levels with other adults of the same age and sex. The Fitness Test was administered throughout the nation from May 6-12, 1984, as a fund raiser for the NFF.

Take the test America!™

1 Three-Minute Step Test

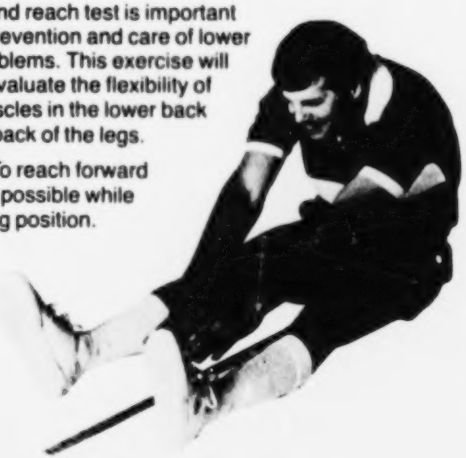


A strong heart and healthy lungs are essential for a long and productive life, and help to decrease the risk of cardiovascular disease.

The step test measures the heart and lungs' response to endurance activities.

GOAL: By stepping up and down on a 12" bench in rhythm with a metronome, your heart rate is measured and compared against nationally recognized fitness standards.

2 Sit & Reach



The sit and reach test is important for the prevention and care of lower back problems. This exercise will help to evaluate the flexibility of your muscles in the lower back and the back of the legs.

GOAL: To reach forward as far as possible while in a sitting position.

3 Arm Hang

The arm hang is included in the National Fitness Test to evaluate muscular strength and endurance of the hands, arms and shoulders. A regular program of arm hangs helps to develop these areas as well as grip strength.

GOAL: To hang from the horizontal bar as long as possible.

3-MINUTE STEP FITNESS STANDARDS (Heart Rate)

AGE	18-29		30-39		40-49		50-59		60 & Over	
SEX	F	M	F	M	F	M	F	M	F	M
GOLD	<80	<75	<84	<78	<88	<80	<92	<85	<95	<90
SILVER	80-110	75-100	84-115	78-109	88-118	80-112	92-123	85-115	95-127	90-118
BRONZE	>110	>100	>115	>109	>118	>112	>123	>115	>127	>118

< = less than   > = more than

SIT & REACH FITNESS STANDARDS (Inches)

AGE	18-29		30-39		40-49		50-59		60 & Over	
SEX	F	M	F	M	F	M	F	M	F	M
GOLD	>22	>21	>22	>21	>21	>20	>20	>19	>20	>19
SILVER	17-22	13-21	17-22	13-21	15-21	13-20	14-20	12-19	14-20	12-19
BRONZE	<17	<13	<17	<13	<15	<13	<14	<12	<14	<12

< = less than   > = more than   *Place heels at 15" mark on yardstick.

ARM HANG FITNESS STANDARDS (Minutes)

AGE	18-29		30-39		40-49		50-59		60 & Over	
SEX	F	M	F	M	F	M	F	M	F	M
GOLD	>1:30	>2:00	>1:20	>1:50	>1:10	>1:35	>1:00	>1:20	>:50	>1:10
SILVER	1:30 :46	2:00 1:00	1:20 :40	1:50 :50	1:10 :30	1:35 :45	1:00 :30	1:20 :35	:50 :21	1:10 :30
BRONZE	<:46	<1:00	<:40	<:50	<:30	<:45	<:30	<:35	<:21	<:30

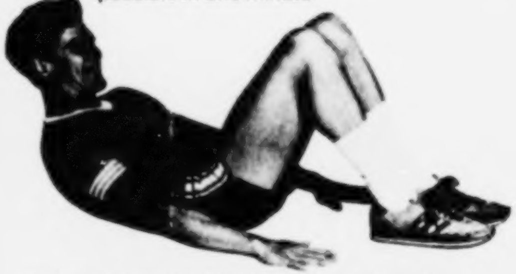
< = less than   > = more than

4 Curl-Ups

Curl-ups provide support for your lower back and help to improve posture while trimming and toning stomach muscles.

This test is effective in determining the muscular strength and endurance of your abdominal area.

GOAL: To do as many correct curl-ups as possible in one minute.



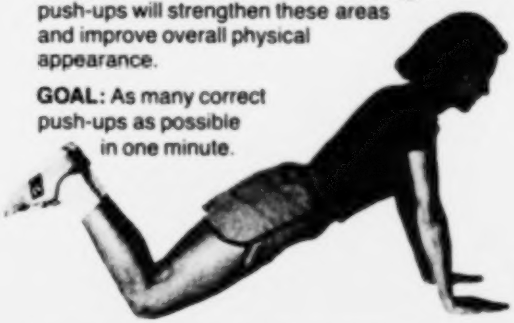
5 Push-Ups

(For Women)

This portion of the National Fitness Test will help us to evaluate muscular strength and endurance in your arms, shoulders and chest.

These muscle groups are used every day to lift, carry, push and press. A continued program of push-ups will strengthen these areas and improve overall physical appearance.

GOAL: As many correct push-ups as possible in one minute.

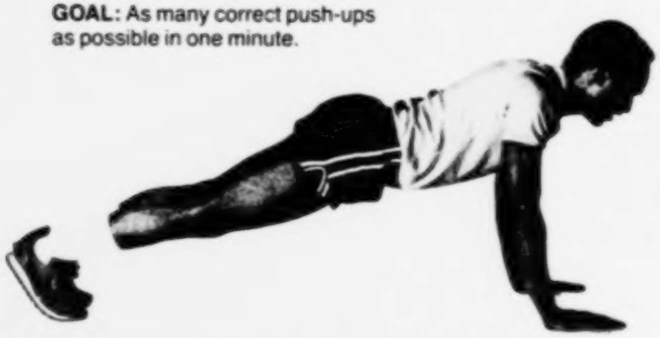


Push-Ups

(For Men)

These muscle groups are used every day to lift, carry, push and press. A continued program of push-ups will strengthen these areas and improve overall physical appearance.

GOAL: As many correct push-ups as possible in one minute.



CURL-UPS FITNESS STANDARDS (Number Completed)

AGE	18-29		30-39		40-49		50-59		60 & Over	
SEX	F	M	F	M	F	M	F	M	F	M
GOLD	>45	>50	>40	>45	>35	>40	>30	>35	>25	>30
SILVER	25-45	30-50	20-40	22-45	16-35	21-40	12-30	18-35	11-25	15-30
BRONZE	<25	<30	<20	<22	<16	<21	<12	<18	<11	<15

< = less than > = more than

PUSH-UPS FITNESS STANDARDS FOR WOMEN (Number Completed)

AGE	18-29	30-39	40-49	50-59	60 & Over
GOLD	>45	>40	>35	>30	>25
SILVER	17-45	12-40	8-35	6-30	5-25
BRONZE	<17	<12	<8	<6	<5

< = less than > = more than

PUSH-UPS FITNESS STANDARDS FOR MEN (Number Completed)

AGE	18-29	30-39	40-49	50-59	60 & Over
GOLD	>50	>45	>40	>35	>30
SILVER	25-50	22-45	19-40	15-35	10-30
BRONZE	<25	<22	<19	<15	<10

< = less than > = more than

Optional Challenge Series

These tests are recommended to anyone who has maintained a regular fitness program for at least six weeks.

The Optional Challenge Series is a three-part test which will be administered by the honor system, since these tests are to be taken before the National Fitness Test.

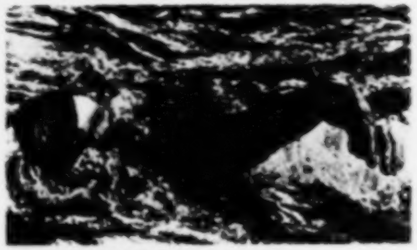
Further information and score sheets are available at all test centers.

1-1/2 MILE RUN

GOAL: To run a 1-1/2 mile course as quickly as possible.

THREE-MILE WALK

GOAL: To walk three miles at as brisk a pace as possible.



600-YARD SWIM

GOAL: To swim 600 yards as quickly as possible.

NUTRITION ADVISORY PANEL

Saturday, April 7, 1984

Artemis P. Simopoulos, M.D. Committee Chairman, *Chairman, Nutrition Coordinating Committee; National Instituues of Health*

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Kelly D. Brownell, Ph.D., *Associate Professor, Department of Psychiatry, University of Pennsylvania School of Medicine*

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Major Bernadette Feist-Fite, Ed.D. M.S.,R.D., *National Defense University–Executive Development Office, Washington, D.C.*

Victor Herbert, M.D., J.D. *Chief of Hematology and Nutrition, Veterans Administration Medical Center, Bronx, NY.*

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LCDR Steven R. Lamar, Ph.D., *Director of Dietetics, Naval Medical Center*

Johanna H. Roth, R.D., *Consulting Nutritionist and Consultant Dietician, Bethesda, Maryland*

LTC David Schnakenberg, USA *Nutrition Staff Officer, Office of the Assistant Surgeon General for Research and Development*

York E. Omnen, *Director of Program Development, President's Council on Physical Fitness and Sports*

Alice Wheaton, *Coordinator, National Women's Leadership Conference on Fitness*

NUTRITION, EXERCISE, AND PHYSICAL FITNESS IN WOMEN

A Position Paper

Prepared by the Nutrition Advisory Committee
for the
National Women's Leadership Conference on Fitness

In recent years, nutrition as well as physical fitness have both received a good deal of attention and publicity from the public and communications media. Along with fad diets for rapid weight loss and for an increased life span have come the fitness buffs of all ages running, jogging, bicycling, jazzercising, etc. Over the past 15 years becoming physically fit has become attractive to many individuals, especially women. With all this attention have come some misconceptions of the truth about physical fitness and the role of diet and nutrition.

This paper addresses the concept of energy balance and weight maintenance through diet and exercise, the dietary sources of nutrients appropriate for the adult woman, the behavioral factors related to eating and exercise practices, the influence of special ergogenic aids and vitamins on physical performance, and the role of nutrition and physical fitness in populations of women with special needs, such as the pregnant woman, the lactating mother, the elderly woman, and special populations such as women in the military.

The term "physical fitness" as defined by the President's Council on Physical Fitness and Sports is "the ability to carry out daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies. Thus, physical fitness is the ability to last, to bear up, to withstand stress, and to persevere under difficult circumstances where an unfit person would quit. It is the opposite to becoming fatigued from ordinary efforts, to lacking energy to enter zestfully into life activities and to becoming exhausted from unexpected demanding physical exertion."

Proper nutrition in combination with exercise is essential to physical fitness. Proper nutrition not only nourishes the body but also helps us to achieve our genetic potential, our best psychological and emotional status, and an overall sense of well-being which are essential to achieving our maximum physical capacity. Exercise, such as running for example, allows women to become lean while they eat more and stay thin, relax more easily, sleep better, meet physical emergencies more comfortably and safely, have better posture and figure, have less iron deficiency and osteoporosis, and some say better sex lives. It is the responsibility of each individual to adapt the most nutritious diet and exercise program appropriate for his/her personal needs and preferences in order that maximum physical performance can be achieved.

The Nutritionally Adequate Diet

One question regarding nutrition's role in physical fitness that often arises is: "Does the food I eat, its kind and quantity, influence my fitness." In 1980, in an attempt to provide the public with nutrition information regarding appropriate dietary habits important to help maintain health, the Department of Health and Human Services and the Department of Agriculture issued a pamphlet entitled "Nutrition and Your Health, Dietary Guidelines for Americans," which include the following seven

- Eat a Variety of Foods
- Maintain Ideal Weight
- Avoid Too Much Fat, Saturated Fat, and Cholesterol
- Eat Foods With Adequate Starch and Fiber
- Avoid Too Much Sugar
- Avoid Too Much Sodium
- If You Do Drink Alcohol, Do So in Moderation

These guidelines emphasize a diet based on variety, balance, and moderation and are considered appropriate for all healthy Americans. They do not apply to persons with special dietary needs because of diseases and conditions that interfere with normal nutrition. It must be noted however that no dietary guideline can guarantee health or well-being since health depends on many factors, including heredity, lifestyle, personality traits, mental health and attitudes, and environment. Food *alone* cannot make people healthy, but good eating habits can help keep people healthy.

The first guideline, "Eat A Variety of Foods," is extremely important since no one food contains all the nutrients needed in the proper amounts for the necessary body functions and maintenance of health. The nutrient requirements of women, as well as men, have been discussed by the National Academy of Sciences, National Research Council, in their publication "Recommended Dietary Allowances." These requirements can most often be met by a diet consisting of a variety of foods from the four food groups: meats, poultry, fish, and legumes; vegetables and fruits; breads, pastas, and cereals; and milk products. For example, many fruits and vegetables are good sources of vitamins C and A, breads and cereals provide the B vitamins and iron, dairy products provide much of the required calcium, while meat, poultry, and legumes are good sources of protein. For the most part, the average American woman has a fairly adequate diet.

The body's need for energy, i.e., total calories, available from protein, carbohydrate, and fat, is the only requirement closely related to physical activity. Most exercising individuals consuming a western diet are likely to be getting the required amounts of protein (1-1.5 grams/kg of body weight), and adequate fat and carbohydrate. The proportion of calories available from these dietary sources is most likely quite acceptable with no need for further supplementation to enhance physical performance. However, as individuals begin a physical conditioning program, the body's need for energy from these calories depends upon whether weight maintenance, weight loss, or weight gain is the desirable outcome.

Energy Balance and Utilization in Relation to Physical Performance

In order to maintain health, the human body needs energy for basal metabolic processes such as life support processes and muscle mass maintenance; physiological processes related to the digestion and metabolism of foods; physical activity such as walking, dancing, etc; growth (including pregnancy) and lactation; and to maintain body temperature. The unit of energy contained in foods as well as that involved in metabolic activities is expressed in calories.

The energy allowances recommended by the NAS are established at a level considered consonant with good health of average persons in each age group and within a given activity category. Adjustments of the recommended average allowances must be made for increased physical activity, age, body size, physiological stresses imposed by illness or injury, and rarely for climate. Adjustments are also made for the special energy demands of pregnancy and lactation.

The dominant factor for variability in energy needs is the proportion of time an individual devotes to moderate and heavy activities in contrast with light or sedentary activities. The daily energy expenditure of a mature woman in a light occupation is approximately 2030 calories. In order to achieve energy balance, i.e., energy intake equivalent to energy expenditure, a diet providing 2030 calories the basis of which are foods from the basic four food groups as described previously, is required.

The issue of body weight, health, and longevity was addressed at a recent workshop, sponsored by the Nutrition Coordinating Committee of the National Institues of Health (NIH) and the Centers for Deisease Control (CDC). Recent analyses of data from the Framingham Heart study indicate that Metropolitan Relative Weight, based on the 1959 Metropolitan Life Desirable Weight Table, is related to both morbidity and mortality and that the weight associated with the greatest longevity tends to be below the average weight of the population under consideration, if such eights are not associated with a history of significant medical impairment. Overweight persons tend to die sooner than average weight persons, especially those overweight at younger ages. A modification of the 1959 Metropolitan Life Desirable Weight Table appeares in the Dietary Guidelines (see Table 1).

TABLE 1

Suggested Body Weights

	Range of Acceptable Weight	
Height (feet-inches)	Men (Pounds)	Women (Pounds)
4'10"		92-119
4'11"		94-122
5'0"		96-125
5'1"		99-128
5'2"	112-141	102-131
5'3"	115-144	105-134
5'4"	118-148	108-138
5'5"	121-152	111-142
5'6"	124-156	114-146
5'7"	128-161	118-150
5'8"	132-166	122-154
5'9"	136-170	126-158
5'10"	140-174	130-163
5'11"	144-179	134-168
6'0"	148-184	138-173
6'1"	152-189	
6'2"	156-194	
6'3"	160-199	
6'4"	164-204	

NOTE: Height without shoes; weight with clothes.
SOURCE: HEW conference on obesity, 1973

The importance of maintaining "desirable body weight" through balancing energy intake with energy expenditure cannot be stressed enough. For individuals who need to lose weight in order to arrive at their desirable body weight, it is essential for them to either decrease their energy intake, increase their physical activity, or a combination of both. Decreasing one's energy intake can be accomplished by eating less fat and fatty foods (such as oils, butter, fatty meats, fried food, high fat dairy products, etc.), sugars and sweets, and alcohol as well as by eating smaller portions of foods. Increasing one's physical activity can easily be accomplished in a number of ways, either by walking, jogging, swimming, dancing, etc. A gradual increase of everyday physical activity can be very helpful in order to achieve energy balance and therefore desirable body weight. The table of approximate energy expenditures by a 150 pound person engaged in various activities, also included in the "Dietary Guidelines" pamphlet, appears on page 11. In order to successfully maintain desirable weight over the long-term, it is often necessary to develop new attitudes and behaviors about eating in general, as well as exercise. Behavior patterns (learned eating habits) play a major role in determining the nature of the diet.

TABLE 2

Approximate Energy Expenditure by a 150 Pound Person in Various Activities

Lying down or sleeping	80
Sitting	100
Driving an automobile	120
Standing	140
Domestic work	180
Walking, 2-½ mph	210
Bicycling, 5-½ mph	210
Gardening	220
Golf; lawn mowing, power mower	250
Bowling	270
Walking, 3-¾ mph	300
Swimming, ¼ mph	300
Square dancing, volleyball; roller skating	350
Wood chopping or sawing	400
Tennis	420
Skiing, 10 mph	600
Squash and handball	600
Bicycling, 13 mph	660
Running, 10 mph	900

SOURCE: Based on material prepared by Robert E. Johnson, M.D., Ph.D., and colleagues, University of Illinois.

For women not trying to lose weight, achieving optimal physical performance is most critically dependent upon the availability of energy from a variety of foods. Exercise is required for physical fitness and exercise burns calories. The extra calories burned by an individual with exercise require an increase in food intake from various carbohydrate, protein, and fat food sources in order to maintain energy balance. Many nutritionists suggest that the proportion of calories from these various food soures to maintain energy balance while participating in an exercise program be as follows: 10-15 percent of calories from protein, 30-35 percent from fat, and 50-60 percent from complex carbohydrates. The best physical performance results from the same balance of food the average American should eat each day, only more.

Thus, the notion that an increase in protein intake, often with supplementation, will enhance metabolic efficiency and enhance athletic performance is not substantiated through scientific evidence at this time. In addition, the belief that carbohydrates are the only fuel source for working muscles is also incorrect; fat and protein have been identified as major sources of energy with fat serving as the primary source. It must be noted that the concept of "carbohydrate loading" to increase muscle glycogen and thereby improve athletic performance appears warranted only in those athletic situations calling for increased endurance over a 60-minute period. Carbohydrate loading is of no advantage to the individual involved in short time high intensity competitions and should be used very selectively for high school and college athletes and rarely, if ever, for early adolescent or preadolescent athletes. Occasional health impairments observed with carbohydrate loading include chest pains, changes in the electrocardiogram, and myoglobinuria.

Special Nutrient Needs of the Pregnant and Lactating Woman

The nutrient needs of pregnant and lactating women are greater than those of the non-pregnant woman. For example, pregnancy imposes additional energy demands related to added maternal tissues, increased maternal metabolism, and work associated with activity and growth of the fetus and placenta. It is estimated that for the energy needs of pregnancy an average of 300 calories per day be added to the energy allowance for non-pregnant females; this approximation does not take into account factors such as physical activity, ambient temperature, or growth needs unrelated to gestation. Energy needs for the lactating mother are even further increased, due to the production of breast milk, by 500 calories per day during the first 3 months of lactation.

Since pregnant women differ in height, weight, degree of overweight and underweight, and physical activity, an appropriate weight gain would be one that is steady and linear from the third month to term, not to exceed 20-25 pounds. Pregnant women are also advised not to restrict calories as part of any weight reduction program since an intake of inadequate calories is potentially harmful to both the mother and developing baby.

In addition to energy, pregnant and lactating women also have increased needs for protein, vitamins A, D, E, and C, the B vitamins, calcium, phosphorous, magnesium, iron, and iodine. Many physicians recommend vitamin-mineral supplements during preganancy, especially folic acid, calcium, and iron. It is generally agreed that the body's increased need for iron during pregnancy cannot be met by the iron content of habitual American diets nor by the existing iron stores of many women; the use of 30-60 milligrams of supplemental iron is, therefore, recommended. Iron needs during lactation, however, are not substantially different from those of non-pregnant women, but continued supplementation of the mother for 2-3 months after parturition is advisable in order to replenish stores depleted by pregnancy. Supplementation may also be desireable for women previously taking oral contraceptives. For the most part, the increased need for other vitamins and minerals can be provided by dietary sources; e.g., additional milk (approximately 1 quart) provides all the calcium and vitamin D and about one-half the protein required by pregnant women. Other nutrients can be supplied by modest increases in fruits and vegetables, cereal grains, and protein-rich foods.

In terms of avoidances, excessive alcohol consumption during pregnancy can cause a number of physical and/or mental aberrations in the developing fetus and therefore, since a "safe level" of alcohol use during pregnancy has not been established, pregnant women are advised to refrain from alcohol during pregnancy. Similarly, a number of studies document the harmful effects of cigarette smoking during pregnancy which results in varying degrees of fetal anoxia. The pregnant woman is advised not to smoke.

In terms physical activity, the pregnant woman is encouraged to continue to exercise and remain active, with less strenuous activity recommended after the seventh month. This will help to prevent excessive weight gain over the course of pregnancy; however, any exercise program should be undertaken with the consent of the physician in charge.

Breast feeding, as previously stated, does increase a woman's need for specific nutrients, many of which can be provided by dietary means. It is important to highlight some of the benefits of breast feeding as compared to bottle feeding one's infant. Breast feeding is now known to be the superior form of infant feeding since antibodies to a wide variety of viruses, bacteria, and bacterial toxins have been found in breast milk. The composition of human milk produced by a well nourished mother meets the nutrient requirements of infants with the possible exception of vitamin D in infants not exposed to sunlight. Breast milk alone provides adequate nutrition for the first 4-6 months of life. Breast fed infants are known to have fewer infections of the ear and lower respiratory tract, less vomiting, and fewer hospital admissions than bottle fed infants. Between 3 and 6 months of age, most infants are developmentally ready to eat from a spoon and swallow semisolid food, usually beginning with cereals. By 1 year of age, infants obtain nearly half of their energy intake from foods other than milk and can eat from the family table.

Appropriateness of Alternative Diets, Dietary Supplementation, and Diet Aids for Health Promotion and Physical Fitness:

Vegetarianism, in its many forms, is being practiced as an alternative diet by many individuals in the U.S., including fitness enthusiasts, for a variety of reasons. Studies of populations practicing vegetarianism reveal a lower incidence of obesity, hypertension, and coronary heart disease than in the general American population. Such studies do not delineate cause-and-effect, however, as they do not take into account associated factors affecting health, such as smoking, alcohol intake, and physical activity.

A well chosen vegetarian diet provides more fiber and less fat than the average American diet. Vegans eat *only* foods of plant origin while lacto-ovo vegetarians include animal products, dairy foods, and eggs in their diet and exclude meat, poultry, and fish. Some of the nutrients that may be deficient in a vegetarian diet include protein, certain minerals (especially zinc, iron and calcium), vitamins (especially B_{12}) and, for non-dairy eaters, also vitamins D and riboflavin. All women, but particularly adolescents and women in child bearing years practicing vegetarianism, may have problems in getting enough iron. Plant sources in general contain less iron than meat products and in a form less well absorbed by humans. The vegetarian therefore needs to choose good sources of iron and also pay particular attention to the dietary factors that enhance iron absorption. Foods high in vitamin C, for example, will help to enhance iron absorption. Women during the reporductive years tend to have lower iron resrves. Taking iron supplements, however, are not recommended unless blood studies indicate an iron deficiency; iron supplements may even cause harm in some situations.

Eating a wide variety of foods in the proper amounts is therefore even more important for the vegetarian, to ensure a sufficient intake of essential nutrients. For exmaple, appropiate protein sources should be substituted for the excluded animal foods, i.e., foods such as legumes, dried beans and peas, garbanzo and navy beens, and lentils; soy protein such as tofu; moderate amounts of nuts and seeds; dairy products and eggs. Alternative diets, such as non-rigid vegetarianism, when based on the principles of variety, balance, and moderation can be used successfully by woman in her attempt to become physically fit.

In terms of the appropriateness of special dietary suplements (vitamins and minerals), alleged ergogenic aids (wheat germ, wheat germ oil, vitamin E, ascorbic acid, lecithin, honey, gelatin, phosphates, sunflower seeds, bee pollen, kelp, or brewer's yeast), the U.S. Olympic Committee physician, Dr. Daniel Hanley notes: "Dietary fads, special supplements and gimmicks will not improve athletic performance, but a well balanced diet can." Such a diet has the variety to provide adequacy in the six vital types of nutrients: fat, carbohydrate, protein, vitamins, minerals, and water. And since vitamins and minerals are not used for energy but rather aid in the burning of energy and are likely to be present in the foods consumed, supplemntation is known to have little or no benefit relative to enhanced physical performance. Dr. Nathan Smith states in *Food for Sport,* "Not only are the supplements worthless, they can conceivably prove harmful. . .a disturbing level of nutritional ignorance support the market for such things as. . .capsules. . .for energy."

Attention is often focussed on the need for supplementary minerals during periods of intense exercise and profuse sweating. Sodium and chloride are the principal electrolyte deficits that must be corrected following profuse sweating. The concentration of electrolytes in sweat and total losses that occur with physical activity vary widely from one individual to another, according to the degree of acclimatization, adrenal cortical activity, environmental temperature, and humidity. The quantity of sodium lost by an adult in sweat increases markedly under conditions of high physical work in high ambient temperatures and may reach levels of 8 grams (350 mEq) per day as a result of profuse sweating. Whenever more than 3 liters of water per day are required to replace sweat losses, extra sodium chloride should be provided.

The precise requirements for sodium and chloride are not known. However, the suggested safe and adequate intake of sodium by adults is 1 to 3 grams (43-130 mEq) and of chloride from 1.7 to 5 grams (48-141 mEq). During periods of regular exercise, the loss of these electrolytes is actually quite small and can be replaced with a normal dietary intake over the subsequent 24 hours. Even athletes losing 5 to 8 liters of sweat and thereby necessitating an intake of 13 to 15 grams of salt per day can obtain this salt from the foods consumed following the event. Salt tablest are neither necessary nor recommended since they frequently cause nausea, vomiting, and gastric distress.

The replacement of body fluids following strenuous exercise is considered even more essential than the replacement of electrolytes. It is extremely important that, whenever sweat losses are significantly increased, liberal amounts of fluid are available to prevent dehydration. It is recommended that fluids be consumed before, during, and after exercise.

Nutrition and Fitness of Special Populations

The Military Population:

Women in the military services of the U.S., i.e., Army, Air Force, Navy, and Marines, represent a special segment of the population with specific physical demands who need to maintain a desirable body weight. The Office of the Surgeon General of the Army has determined "Military Recommended Dietary Allowances" for male and female personnel which are adapted from the familiar RDA. These allowances for adult women include a recommended calorie intake ranging from 2000-2800 calories (an intake considered appropriate to maintain desirable body weight for those who routinely engage in moderate levels of physical activity in a temperate climate) and a protein requirement of 80 grams per day, a level considered adequate to meet dietary protein demands to support intense physical activity such as that encountered in basic military training. For personnel involved in vigorous physical activity for prolonged periods of time, the recommended energy allowance is increased by at least 25 percent or approximately 500-900 calories per day.

The Office of the Surgeon General has also recommended that the fat content of the military diet be lowered to no more than 35 percent of total energy daily, whereas sodium intake should approximate 4.1 grams. Weight control programs have also been initiated in order to assist personnel to achieve and maintain desirable weight. These programs restrict calories to 1200-1500 calories per day while eating a wide variety of nutritious foods, coupled with a vigorous physical activity program. The weight loss is gradual, not more than two pounds per week on the average, and changes in eating habits are sought in order to prevent regaining the weight.

Recently, the Office of the Surgeon General of the Army issued "General Guidelines for a Healthful Diet" based on the "Dietary Guidelines for Americans" in order to provide guidelines to the general military population to promote a lifestyle that allows an individual and his/her family to achieve optimal total fitness. These guidelines, also based on variety, moderation, and balance, are as follows: a) Consume Regularly a Wide Variety of Nutritious Foods; b) Moderate Intake of Calories; c) Avoid Excessive Dietary Fat Intake; d)Eat Foods with Adequate Starch and Fiber; e) Moderate Intake of Refined and Other Processed Sugars and f) Moderate Intake of Salt.

The Elderly:

As women age, their body's need for energy declines; however, the requirements for most nutrients are not very different from the requirement for younger adult women. Most individuals experience a decrease in physical activity with age and often a subsequent gain in weight. It is extremely important, therefore, that older women pay particular attention to their diet by following the basic dietary guidelines presented earlier in this paper, only decreasing their caloric intake in proportion to their decrease in caloric expenditure.

Remaining physically active through some kind of exercise, however, is very important for elderly women even if it is not as vigorous or strenuous an activity as previously undertaken when young. A daily walk or bicycling on a stationary bicycle at a slow speed are just two forms of exercise appropriate for an older individual. It is advisiable that before any kind of strenuous exercise is considered that the matter be discussed with a physician. Not only is exercise helpful in weight control but it also plays a role in the prevention of osteoporosis—a condition which results in a loss of calcium from the bones and is prevalent in women past menopause. Data from studies have shown that inactivity is correlated with bone loss.

Benefits of Exercise on Health

Citing all of the physiological and psychological benefits of exercise, be it aerobic, isometric, etc. is beyond the scope of this paper. However, some examples of the potential benefits of aerobic exercise include improved cardiovascular fitness, decreased low density lipoprotein cholesterol levels, increased high density lipoprotein levels, reduced systolic blood pressure, reduced blood glucose levels probably in combination with weight loss, and decreased risk of osteoporosis. Thus, a regular exercise program is important to help individuals control their weight, and also may play a role in the prevention of hypertension, coronary heart disease, etc. Regular exercise may also have a tranquilizing effect and be a positive influence on mild forms of depression. An overall feeling of vigor and well-being after partaking in exercise is common.

Summary

A nutritious diet based on variety, moderation, and balance followed throughout the life cycle, together with a regular exercise program are the two basic ingredients in the recipe for achieving physical fitness. Neither one alone can achieve the degree of fitness, performance, good health, and sense of well-being as the two together. In our attempts to dispel the many myths surrounding the role of nutrition in physical fitness, it is obvious that individuals need only to follow the Dietary Guidelines for Americans in order to achieve their maximum physicl performance. No special dietary supplements, ergogenic aids, or other kinds of gimmicks can enhance physical performance beyond what can result from a nutritious diet based on the four food groups.

It is now the responsibility of those of us present today to inform the public about nutrition's role in physical fitness and to assist them in acquiring the motivation to adjust or change their eating habits in order that they are consistent with the Dietary Guidelines.

CONFERENCE LUNCHEON

Saturday, April 7, 1985

Reverend Henry C. Gregory, III
Shiloh Baptist Church, Washington, DC

PRESIDENT'S COUNCIL

Sarah Purcell

Sarah Purcell is co-star of the NBC-TV television series, "Real People." She is also the producer and star of major motion pictures for television. Together with George Schlatter, executive producer of "Real People," she produced and narrated a video tape on the problem of missing children which was made available to 25,000 local PTA's across the country. Ms. Purcell is the spokeperson for the Big Sisters of Los Angeles.

I was really thrilled to be asked to speak at a conference on physical fitness, I actually thought it was a good idea for someone in television to be represented here in as much as television as done as much for physical fitness as Tip O'Neill has done for designer jeans. Evidently the damage done has gone far beyond the national average of television viewing time is up over four hours per person per day. Not only are people sitting watching television but while they are sitting they are eating a lot of high caloric munchies washed down with soft-drinks whose lables sometimes read like our kid's chemistry sets. If the American people are soft and flabby I guess television must assume part of that responsibility.

But you in this room are helping to solve that problem by making people aware of the necessity for good nutrition, good exercise and other positive lifestyle practices. The women in United States have accomplished a great deal in achieving better health for themselves and for their families but obviously there is a lot more that can be accomplished, otherwise why would we all be here. That's why I was so glad to hear about this conference and the increased effort of government and private enterprise to provide education and motivation by launching this nationwide fitness campaign. Let's face it, if we want to improve anything in the country it is the women who have to do it.

Women do deserve a great deal of credit for having accomplished a lot. Statistics show that 65% of the new members of health clubs are women. Women today in their 30's and 40's are actually in better physical condition than our mothers were in their 20's. Young girls are more active in more sports than ever before in the history of the country. Grade schools, high schools and universities have much more extensive team sports and facilities available to women students than ever before. We are more aware, more informed and involved than any generation of women in any country, anywhere in the world. I think that is a pretty good start.

I recently got married and am now the proud stepmother of a five year old son, so the role of motherhood was kind of sudden, but I now find that I am more concerned about what my son's diet is, what's going to happen to his teeth, what foods make him hyper, what his eating habits are, and what he considers to be his minimum daily requirement of Twinkies, nachos, Cheetos and Fruitloops. I am also concerned about his mental as well as physical well being. I have also become concerned about what he watches on television.

In the morning, right after Sesame Street television offers game shows and soap operas, and I am not too sure that a young man of five years old is quite ready to deal with those emotionally, physically or intellectually. And then if you leave the set on the news comes on in the afternoon and I am not too sure that I am really able to handle that physically, emotionally or intellectually. Prime time television, if you are not aware, has done away with the family hour which used to be on from 8:00-9:00 pm. That family hour was there to control sex and violence until 9:00. Now almost every show is car crashes, fist fights, and explosions, in respect to the men in the audience I won't even mention the sex.

It is getting harder and harder to tell where the news reporting leaves off and the entertainment begins. On the six o'clock news you see auto accidents where cars collide, people are maimed and people are destroyed. Later on you see cars leap over each other, collide, turn over and explode, but nobody ever gets hurt. Let's face it, the car on Knight Rider is the single worst driver on the American freeway system and when the car talks, it is a man's voice. Thank goodness it is not a woman's.

Recently the National Coalition on Television Violence released a most violent TV program list which listed three top rated 8:00 pm shows with an average of 62 violent acts per hour. This is not easy because there are only 60 minutes in an hour and then you take away 6 minutes for commercials and then you have an opening and a closing to each show and then you have to show somebody in bed. So if you figure that out, it comes to almost 1½ acts of violence per minute, this is from 8:00-9:00. I am not a prude, I work for television and I am very proud of what I do and I am very proud of many shows that are on television but this does concern me. I feel from other people that I speak to that there is a growing anxiousness from other people wishing to see less of this and to see more worthwhile shows.

The six o'clock news tells us of a recent study which indicates that two bottles of beer a day can increase the chance of some cancers. But then at 8:00 you see an avalanche of beer commercials. Have you ever noticed who sponsors some of those athletic events on television, the football games, the baseball games—the alcoholic beverage industry. You have sports figures, coaches and celebrities who are supposedly into physical fitness telling our people that you have to "go for the gusto, now it is Miller time, and here's to good friends." The message conveyed is that you aren't healthy or attractive or fun unless you are in that mainstream. This situation not only hurts the image of physical fitness but in my mind it also hurts the chance for mental fitness. This is tough to combat, last year alone the alcoholic beverage industry spent $1.1 billion on advertising. I don't know what the budget for this particular conference on physical fitness is but I doubt that it is close to that. So this gives you an idea of what we are up against to promote physical fitness.

There was an old joke, "clean body or clean mind, take your pick." I think we can pick both but that requires an active and aggressive campaign and I also believe the first battleground has to be television and the media.

There is something drastically wrong when television's best shows always deal with the worst subjects, battered women, incest, pornography, rape, infidelity, child molestation and prostitution. Shows of this kind receive enormous media attention, even if the press writes about how outraged they are, the press and the network still publicize these shows far more than anything else. So we see more of these programs than those that deal with the other aspects of life in America.

On Real People we recently did a segment on a woman who runs a drug rehabilitation program in Florida. Now this shows a positive way for kids to kick the drug habit which is so prevalent today. This lady found a way to give hope to both kids and their parents. We told the story yet we were unable to get any coverage from the news media. One story appeared in the press about this segment on Real People. We were told it wasn't a popular issue. On the other hand if you pick up the newspaper or watch the evening news you can follow in minute detail all the aspects of the John DeLorean drug trial. It seems that television and the media have time and space for those corrupting our society with drugs yet nobody has time for those trying to correct the problem.

Over the years on Real People we have done literally hundreds of stories about people and their efforts to help each other and to deal with problems such as missing children, drunk driving, drug and alcohol abuse, the plight of the handicapped, feeding the hungry and help for the elderly. Those are stories I am extremely proud of, they are inspirational, they provided heroes and role models for everyone to look up to, yet none of these stories ever received much media attention.

Our problem continues to be that the networks and the media feel there is no audience for nice. It is hard to promote anything decent and uplifting. The programs of traditional American values are disappearing one by one, Little House on the Prairie, Eight is Enough and The Waltons. These shows are replaced with car crashes, bar room brawls, murder, and on and on. The question is how to promote physical fitness and stop the deterioration of mental fitness we find in television and the media. There are some things we can do.

I am reminded of a story told to me by Real People's executive producer, George Schlatter. He heard this story as a boy in Missouri. It concerned a farmer who sold his neighbor a mule. The farmer guaranteed the mule would obey any command. The neighbor took the mule home and the mule wouldn't get out of the truck.

So the neighbor in frustration called the farmer and complained. The farmer came right over, picked up a big 2 × 4 and whacked the mule a good one. Well, the neighbor said, "you told me the mule would obey any command." The farmer said, "that's true but you have to get it's attention first."

All we have to do is get the media's attention. It can be done without a 2 × 4. It can be done with something so simple it is sometimes over looked and that is the letter. In the television industry the only thing that means more than ratings is the letter. As an example, there is a show on television called Cagney and Lacey. That show portrays women as being effective, intelligent and responsible. Last year it was cancelled because of low ratings but then surprisingly a few months later it came back on the air. The reason it was brought back was due solely to a flood of letters from concerned individuals who thought that show was a good one and that it should remain on the air. The same story is true for a show called Fame. It was later brought back after being cancelled and the enormous letter writing campaign was what brought that show back on the air. That show portrayed young people in a positive light and there were concerned individuals who agreed with that and wanted to keep it on the air. The power of the letter is awesome.

We don't have to have $1.1 billion to promote physical and mental fitness but I am sure that each of us can pay for a 20^{c} stamp and urge our friends to do likewise. A thousand letters can do literally as much as $1.1 billion in advertising. Complain when you see things you don't like, don't forget to cheer when you see things you do like, don't be afraid to bombard the networks and the press with your letters and opinions. Chances are your opinions are more valuable than theirs are anyways.

The air we breathe can be cleaner. The foods we eat can be purer. The chemical contents of junk food can be reduced and certainly the shows we see on television can more accurately depict the tastes and lifestyles of the mainstream American. I think unless we get the networks to realize that women in jeopardy is not an acceptable premise for dramatic entertainment television shows, women will indeed be in jeopardy. Unless we get the young television viewer to realize that the only high comes from being high on yourself we will not be physically fit as a nation. We cannot allow television to go on using drug abuse as a dramatic premise and making the use of alcohol and drugs trendy, hep, and with it and funny. If we allow ourselves to generate the concept that violence is a natural and acceptable reaction to any frustration, we may well be headed for another war, and not with Russia, with each other.

If we allow our children to be nourished only by junk food in their stomachs and junk thoughts in their minds, then we will have no one to blame but ourselves. We will be left with human junk to deal with in the future. If the women and men in this room decided that they were going to perpetuate those shows that have a positive effect on the minds of young viewers the networks will listen and changes will come about.

Carolyn K. Davis, Ph.D.

PRESIDENT'S COUNCIL
ON PHY
SPORTS

Carolyne K. Davis, R.N., Ph.D., has served as the administrator of the Health Care Financing Administration (HCFA), Department of Health and Human Services since 1981. As HCFS's administrator, Dr. Davis oversees the functions of the Medicare and Medicaid programs. Dr. Davis is the former associate vice-president for academic affairs at the University of Michigan where she also served as the Dean of the School of Nursing. She has published articles and research documents addressing a variety of issues facing the health care system.

Let me first congratulate all of you for your interest in health and fitness.

This is the first national meeting devoted to improving the fitness of women and families.

It is a clear sign that women's influence in the community and within the family is being recognized in this vital area.

Improved physical fitness means better health, the prevention of disease and disability and lower expenditures for health care.

This Nation devoted $322 billion to health care in 1982. That sum could have been significantly reduced if we as a Nation were more physically fit.

FEELING FIT IS SOMETHING THAT EVERYONE WANTS, BUT NOT EVERYONE ACHIEVES.

- It usually requires us to change habits acquired over a lifetime—and that takes effort.
- It's a special challenge for many women today whose jobs often require them to sit long hours at a desk.

- I know that because my day is booked solid with meetings. Even when I travel, I'm often seated long hours in an airplane.
- Long hours take their toll too: my work day often lasts from 6 in the morning to 8 at night, and then some.
- Schedules like that mean that you have to make time for daily exercise and that your exercise should be enjoyable and not a chore.
- I believe the key to success in an exercise program is self awareness and a positive mental attitude.
- About a year ago, my 22-year-old son designed an exercise and nutrition program for me. It has changed my life, lowered my stress level and made me feel more positive about life in general.
- My *aerobic* exercise consists of walking to and from work, which is about 2 miles a day and swimming 20 laps 4 days a week, which helps me strengthen my cardiovascular system.
- My *anerobic fitness* program consists of working in the gym with light weights, dumb bells and a universal machine to increase my strength and endurance.
- I have also changed my diet, which is high in fiber, moderate in protein and low in saturated fats. I try to count my calorie consumption and maintain a daily intake between 1,300 and 1,500 calories, supplemented by vitamin C and calcium.
- I have already seen results! I have lost 15 pounds, increased my endurance and lowered my resting heart rate.
- Most important, I have lowered my stress level and I am not so tired. This makes it easier for me to tackle problems at work and make critical decisions.
- The longest that any of my predecessors held my position was 18 months; I have now been in this job for 38 months, more than twice as long. Part of the reason for my longevity is my increased ability to cope with stress through my daily exercise program.

ONE CAN FIND MANY REASONS FOR NOT TAKING THE TIME TO KEEP FIT:

- "the press of business," "the demands of my family" and "my work in the community" are the usual reasons women give.
- I very nearly fell into accepting this rationale myself.
- But the lesson is very clear and straightforward: MAKE TIME! Take care of your health—because if you don't who else can?

THERE ARE SEVERAL GOOD REASONS WHY ONE SHOULD TAKE CARE OF THEIR HEALTH—AND ONE IS OBVIOUSLY TO FEEL BETTER AND LIVE LONGER.

- The other reason is that the cost of becoming ill today is climbing at a rapid pace;
- And no one is more aware of that than I, who administer Medicare and Medicaid:
- These two programs pay for the health care of 50 million poor, aged and disabled Americans, and their cost has been going up and up:
- In fiscal 1981, it was $54 billion; by fiscal 1985, it's expected to be $98 billion.
- In fiscal 1984, these programs will be spending money at the rate of $10 million an hour, and even with the suggested restraints in the fiscal 1985 budget, we will be spending $11 million an hour.
- Over the last five years ('78-'83) Medicare inpatient hospital costs alone have increased more than 119% and the end is not in sight: sometime around 1991 the Medicare Trust Fund will go broke unless we act. We must slow the expenditures from the Trust Fund and we will.
- Overall, health care is taking an ever-larger piece of the Nation's output: from 6% of GNP in 1965 to over 10.5% last year.
- Back in 1965, a trip to the hospital cost you an average of $316; by 1980, it cost $1,844—and it's even more today!

THESE GROWING COSTS HAVE BEEN ABSORBED MOSTLY BY EMPLOYERS AND GOVERNMENT, SO THEY'VE BEEN LARGELY INVISIBLE TO PEOPLE.

- That's made health care appear to people to be 'free', leading inevitably to the over-use and waste of medical resources;
- Which is one reason why the cost of care has been going up so rapidly.
- Even providers of care have been careless about resources: a physician-editor testified in Congress recently that up to $10 billion a year is being wasted on medical procedures that are either useless or redundant;
- All this is going to have to change—and one way to do that will be to increase people's out-of-pocket cost for care so both they and their doctors are more cost conscious;

LOOKING AT HEALTH FROM A NATIONAL PERSPECTIVE, WE ARE MAKING GOOD PROGRESS AGAINST PREMATURE DEATH AND DISABILITY:

- Anyone here in their 30's can expect to live about 6 years longer than their parents—about 74 years is the average now;
- In the last 3 decades, deaths from heart attacks are down 20% and deaths from stroke are down 30%'
- And the cancer death rate has droped 33% for people under 45.

MUCH OF THAT PROGRESS IS DUE TO DRAMATIC ADVANCES IN TREATMENT.

- The past few decades have seen a steady stream of advances in medicine: CAT-scanners, new drugs, open-heart surgery, organ transplants, kidney machines, reconstructive surgery and so on.

- These advances have saved many lives, but a great cost because crisis care is expensive;
- The issue is: How much longer can the Country afford this continued emphasis on crisis care? At our present annual growth in outlays the day would come when we would be spending 40% of the Nation's output for health care.
- Obviously, we can't let that happen. If it did, the Nation's exports would be priced out of world markets, stunting our economic growth.
- As it is, American automakers now spend more per car on workers' health insurance than they do on the steel that goes into that car.
- Obviously, more than the Nation's physical health is at stake here; its economic health is at stake, too;
- We simply must do more *individually* to take care of our health and stay out of hospitals.

THE GOOD NEWS IS THAT WE CAN, IF WE TAKE BETTER CARE OF OURSELVES.

- Discounting accidents and any genetic problems, we can just about decide for ourselves how long and vigorous a life we want to live;
- The shame is that most people still don't realize that. Surveys show, for example, that nearly half the people in this Country think there's little they can do personally to keep from getting cancer.
- But as Secretary Heckler pointed out not long ago, 30% of all cancer deaths are related to smoking in this Country—and another 35% are traceable to our diets. We can do something about both of these.
- Pollution accounts for a mere 2% of all cancers—and even that's controllable if we clean up our environment.

A FEW YEARS AGO, THE NATIONAL ACADEMY OF SCIENCES RELEASED A REPORT SAYING THAT UP TO HALF THE MORTALITY FROM THE TEN LEADING CAUSES OF DEATH IN AMERICA COULD BE TRACED TO PEOPLE'S PERSONAL LIFESTYLES.

- In fact, the two biggest killers and disablers—heart disease and cancer—are largely 'lifestyle' diseases;
- Most of us can probably avoid either of them right on through the 'dangerous decade' of our fifties if we follow a few simple rules for living.

I WANT TO EMPHASIZE THAT THESE RULES ARE NOT MADE UP, THEY ARE BASED ON SCIENTIFIC STUDIES ON POPULATION GROUPS CONDUCTED OVER MANY YEARS. HERE THEY ARE:

- Don't smoke
- Eat a high-fiber, low-fat, low-salt diet and maintain normal weight
- Use alcohol in moderation if at all
- Exercise, sensibly and routinely
- Get a good night's sleep
- Learn to manage stress
- Use a seat belt

We all know the rules. But we need motivation to apply them to our own personal lifestyle. A conference like this that focuses on the benefits of exercise can help motivate people to change unhealthy lifestyles.

PEOPLE WHO WANT TO CHANGE UNHEALTHY HABITS ARE FINDING THAT THEY NO LONGER HAVE TO GO IT ALONE, AS THEY ONCE DID.

- Employers, for example, have begun sponsoring all kinds of health promotion, fitness and behavior-change programs—because they've found out that healthy employees are good business;
- An entire industry has also sprung up: health spas, books on health, TV exercise shows, and organizations that help people to quit smoking, lose weight or overcome a drinking problem.
- The agency I direct is also involved: This year, we'll begin a pilot project to test what impact preventive services will have on the cost of medicare. Most people eligible for Medicare must be at least age 65, so it's never too late to start working on a healthier lifestyle, we believe.
- We're also making prevention a research priority of the Medicaid program. We want to study what impact preventive services have on reducing the overall cost of health care, particularly among children of Medicaid.

YOUR FEDERAL GOVERNMENT HAS ALSO DEVELOPED A SET OF NATIONAL GOALS FOR PROMOTING HEALTH.

- These goals are spelled out in a Public Health Service document called, *Promoting Health, Preventing Disease: Objectives for the Nation.*
- They are based on the findings of a 1979 Surgeon General's report.
- All 225 of them can be achieved by the year 1990.

HERE ARE A FEW EXAMPLES, TO GIVE YOU AN IDEA:

- One is to lower to 25% the proportion of adults who smoke. Achieving that would lower the present tragic death rates from lung and other cancers, cardiovascular conditions, digestive diseases and other conditions that smoking brings on.
- Another goal is to bring under long-term control 60% of the estimated population with high blood pressure (160/95) or higher). Control is defined as a pressure of 140/90 or lower for 2 or more years.
- Each health goal has a number of associated objectives. For example, another objective for high blood pressure control is to reduce the average daily sodium intake of adults from its present 4-to-10 gram range to a 3-to-6 gram range. Salt, as you know, fosters high blood pressure.
- Another goal is to reduce by half the motor vehicle death rate among children 15 and under.
- Still another is to reduce the infant death rate from its present 11.2 to 9 per 1,000 live births. That will mean teaching more young parents about the birth process and getting mothers-to-be to come in for prenatal care and counseling.

IN THE CASE OF PHYSICAL FITNESS, HERE ARE SOME OF THE GOALS FOR 1990:

- 90% of those between ages 10 and 17 should be participating regularly in physical activities that can be carried over into adulthood;
- More than 60% of those between the ages of 18 to 65 should be participating regularly in physical education programs, (in contrast to the 33% who were in 1975);
- More than half the primary care physicians should be including a history of physical fitness as part of their initial examination of new patients;
- More than 25% of firms employing over 500 people should be sponsoring fitness programs (in contrast to the 2.5% that offered them in 1979).

THE ONE THING WE MUST DO IF WE ARE TO ACHIEVE ALL OF THESE OBJECTIVES IS TO INVOLVE AMERICANS FROM EVERY WALK OF LIFE.

- Government can set goals, provide instructional materials and lend strategic support—but getting people to take better care of themselves is a job for grassroots America.
- Some of you are Girl Scout and YWCA executives, I'm told. Others are in executive business management. Whatever your career or interest, you are marked as leaders.
- As such, you can influence the future health prospects of countless people.
- We need to teach everyone the ways of good health and the benefits of exercise and physical fitness.

THE BENEFITS WE WILL DERIVE FROM EXERCISE ARE CONSIDERABLE:

- It will improve our cardiovascular fitness, thereby preventing coronary artery disease and lowering our blood pressure;
- It will lower our cholesterol levels;
- It will decrease our risk of getting brittle bones, or osteoporosis as it is called;
- and finally, it will help to control our weight, which can prevent cardiovascular problems and adult diabetes.

BUT WE WILL NEED TO PLAN FOR A HEALTHIER AMERICA:

- That means cementing a strong national partnership between government and voluntary agencies.
- We can succeed because the motivation to improve our health is powerful: to feel better, and to pay less money for personal health care and for taxes, since we all share in paying for the high cost of health care in America;
- *Because promoting health is truly everyone's job.*

IF YOU WANT TO GET INVOLVED IN HELPING TO DO THAT, I WELCOME YOU TO JOIN IN THE EFFORT. THERE ARE PROJECTS THAT NEED DOING, IF WE'RE TO ACHIEVE THOSE HEALTH GOALS FOR 1990.

- The National Health Information Clearinghouse has material on how to get started:

  — such as the national health objectives document I have already mentioned;

  — And booklets on how to organize health campaigns in schools and workplaces;

  — And booklets on what physicians and medical schools can do;

  — Plus a bibliography that lists everything the clearinghouse has to offer on the subject.

YOU CAN FIND OUT MORE ABOUT THESE MATERIALS BY CALLING THE TOLL-FREE HOTLINE OF THE CLEARINGHOUSE—800/336-4797.

Working together, we can promote a healthier life style. This in turn will help to slow the growth rate of outlays for health care.

Richard O. Keelor, Ph.D.

Dr. Richard O. Keelor is the past president of the Campbell's Institute for Health and Fitness. He is the former director of program development for the President's Council on Physical Fitness and Sports and continues to be a special advisor. Dr. Keelor has received national awards for his leadership and contributions to health and fitness including the 1983 U.S. Jaycees Healthy American Fitness Leader Award. Dr. Keelor is president and chief executive officer of Living Well of America.

The good doctor, Larry Lamb, renowned scientist and author who spends his life pouring over data, extolled you to do three things—he said, "lead, lead, lead." It is clear that leadership is the key. You have heard that reoccurring theme woven through the fabric of almost every presentation of this conference. Because leadership is the key, experts are a dime a dozen. Each of us represents an opportunity to play a role, to be part of the solution rather than a part of the problem. I submit to you that there are a variety of things each of us must consider.

First of all, in terms of our own personal lives, live that fit and dynamic lifestyle combined with stress management and proper nutrition and all the other health behaviors, be an example as you walk down the street. Do you realize that the impression that one jogger makes as she runs down the road and passes a thousand cars? How many of you have driven down a road and not looked at a jogger? It has a tremendous impact.

Look at what you can do in terms of your school. We heard Dr. Davis refer to the objectives of the nation. The National Youth Fitness Conference will be held here in June. Be a part of it, if you can't be a part of it, get the most important educator in your community here. Learn about the essential nature of physical education. Prepare to survive in an ordinary, inactive stressful society.

There are many opportunities for leadership. Just think of what you can do. Clearly you represent tremendous influence. If someone could discover a serum to cure heart disease, hypertension, stress related disorders, chronic fatigue and low back pain, we would headline that scientist's discovery. We would put headlines in the paper, dedicate hospitals, parks and libraries to their good name. You are the Jonas Salks and the Louis Pasteurs of our day. Infectious deseases are in the past and are no longer the issue.

The issue is leadership. We challenge you today to look at what you can do within your sphere of influence, to be a part of the solution. And that of course is the substance of the next presentation which we will adjourn to, where you meet the governors' councils. We have a plan of action for you. Mr. Glenn Swengros, Mr. Lee Dukes, and Mr. Jim Liston are going to share that with you. We are going to try and help you find out how you can take the enthusiasm, given the scientific basis, given the motivational kinds of activities that you participated in and get involved. Make a commitment.

STATE REPRESENTATIVES MEETING

Saturday, April 7, 1984

Moderator: Glenn V. Swengros, Director of Federal-State Relations
President's Council on Physical Fitness and Sports

Resources: Jim Liston, President, National Association of Governors' Councils on Physical Fitness and Sports

Lee Dukes, Director, Campbell's Institute for Health and Fitness

Alice Wheaton, Conference Coordinator

GLENN V. SWENGROS, Director of Federal-State Relations, President's Council on Physical Fitness and Sports: We have in this country a great network of organizations concerned with physical fitness, the President's Council on Physical Fitness and Sports (PCPFS), the National Parks and Recreation Association, the National Assoication of Governors' Councils on Physical Fitness and Sports, the American Alliance for Health, Physical Education, Recreation and Dance, and the Association for Fitness in Business. The PCPFS is hopeful that the governors' councils will play quarterback in their states and call these organizations together with others, to talk about the status of fitness in their state and about things that need to be done for physical fitness.

We ask you to get together with your governor's council when you get home and discuss with them what you have seen and learned here. Talk about what you might do in your state to develop a similar conference and coordinate it with us at PCPFS. This would be a great service that you could provide to the National Program of Physical Fitness and Sports. Help keep the momentum going. In states where there are no governors' councils, we appeal to you to work with us, especially with Jim Liston and myself, to encourage your governor to recognize the effectiveness of these councils and what they can do.

JIM LISTON, President, National Association of Governors' Councils on Physical Fitness and Sports: In 1979, through the urging to the PCPFS, the National Association of Governors' Councils was formed. We now have 31 state councils, that are in many ways similar and in many ways different. Some exist by executive order, some are existing under state legislature. We feel the way to establish a council is through a legislative act by the general assembly of your state. As you know, executive orders are subject to abolishment the minute a new governor assumes office. We encourage you to strive to develop a governor's council by trying to hit home the fact that you want to have it permanent.

I am going to present six points on how to go about organizing a state conference on physical fitness for women.

Don't feel badly if you are not in a state that doesn't have a governor's council. I think a conference of this type could be the catalyst to create a governor's council in your state. I have been on the job for six years and one of the things we keep harking about when we get a request from someone in New York or Ohio or wherever it might be that doesn't have a governor's council, is to go directly to the governor himself. I think we should start directing some of the attention, especially with this project, to the governor and the governor's wife.

We are in a political arena and you have to build a good rationale for your request. Write a report. There is nothing that is going to be more damaging to your effort than not putting it in writing. Write a letter and write it immediately. A letter is worth a thousand ideas. Don't be afraid or embarassed to include what is in it personally for the governor, that his image among women is going to be enhanced. Send a copy to the governor's wife because when she or her staff reads it, it will hit home. Don't be apologetic for trying to get the job done. You are doing a service to the state, you are offering the governor an opportunity. Don't write it as if it were a burden. We all know that the governor and his staff are busy, but this is something they should put on their schedule. If you are excited, I guarantee you will hit the right nerve with the right staff person. It may take you time, but you will find them. That is number one, write a report.

Number two, utilize the governor's council on physical fitness in your state. The overall mission of a governor's council is to promote fitness among all the state residents. This project on women's fitness is right up their alley. You will have the help of the 31 states that have a council or a commission. As far as I know there is not one council that has closed meetings, I think they are open to the public. We hold quarterly meetings in Illinois, and the public is invited. I am sure all the other councils do also. If you are not a member of the council you can certainly be an active participant in their proceedings. Utilize the governors' councils. As I said before, if you don't have a governor's council, use this project to spark the interest of the governor or his wife. This may be your way in the door.

Number three, after you write the letter, we are going to try to develop a strategic plan for you. After you get a response, and expect a response from that letter, I would suggest that you arrange a meeting with someone in the governor's office or with the governor's wife. I don't think you are going to get in to see the governor. If you do, hats off to you. If you know a power broker in your state, you may be able to get in. But don't be disappointed if you have to meet with the press secretary or one of the administrative assistants. Those people are the movers and shakers and they are the ones that will get the job done for you. I do want to make another point. Someone from a state came up to me and said, "you know, I got a phone call from the governor's office and they were very apathetic saying there was this conference in Washington and suggested that I go." The point he was saying was that it will probably do you more good than it will us. What you have to do is find out who your ally is in that office. Arrange a meeting with somebody who believes in what you believe. If the press secretary is fifty pounds overweight, smokes cigarettes and drinks heavily, I would suggest going to the administrative aide who may be into a running program. Research what the governor's wife does for her own fitness. Perhaps she is a walker. Meet with her and talk about promoting walking and ask her to be the lead walker in a celebrity walk. Do some research, it may be the best thing you do. These people are busy and they have priorities. In the state of Illinois, the governor's council is not a daily crisis. Daily crises are taxes and feeding children in the ghettos. If you make a good presentation by letter, you will get some time.

Number four, find a good corporate sponsor. You will need start-up monies. We have found, and the other state councils have found, that the private sector is very eager to cooperate with us. There are two reasons, number one, they can't find a better bill of goods, the price is right. Most corporate sponsors have to pay before they get into a program. It is the best deal they have had all year. They will say yes if it is presented right and you give something back. We have got to get away from this syndrome of take, take, take and not give something back. To find a good corporate sponsor, Campbell's has been a wonderful example, go to someone you believe in. It may be a hardware company or an industrial concern in your state. Before you go to the source, make sure that sponsor is comfortable with the governor's office. Don't line up something, have the $5,000 check in hand, then find out the governor is not friendly with the sponsor.

Number five, network your efforts with other health and fitness organizations. In the state of Illinois, when we invite people to be in cooperation with us, they get excited because we represent the governor. We represent a power broker in the state, the chief executive officer has a chance to put his or her logo under the governor's council on physical fitness. Anytime I can get the logo of the President's Council you can bet your boots I am going to use it. Every person in this country who went through the public school system knows the President's Council. Our name recognition in Illinois, and we think we have done a good job, is probably less than fifteen precent. We have to be realistic about that. We want those people out there to get excited so the YWCAs, YMCAs, park and recreation departments, local health departments, state PTAs, and anybody who is a mover and a shaker, will be eager to serve on that steering committee. You give them some recognition for that.

One suggestion that I have for networking efforts which works wonders is the following. When we invite a group, we will draft a letter and take it over to the governor's office for his signature. The invitation is coming, therefore, from the governor himself. That makes an impact!

Number six, select a good site. The best sites we found, and we took the example from Maryland, are state or local community colleges and large hotels. Select an accessible site where you can keep the cost down for the participants.

To summarize: write a report; utilize the governor's council; arrange a meeting with the governor's wife or staff; find a good corporate sponsor; network your effort; and select a good site. I would encourage you to share your ideas with other states.

LEE DUKES, current Director of Program Development, Campbell's Institute for Health and Fitness: Anytime you plan to conduct a special event, such as a conference, it is going to take money, manpower and effort. Many of you think there is not much money available to you in the state. Right there you have made your first mistake by being negative. If you are not sold about what you are doing and confident, maybe you should get someone else to look for you.

If you can get one corporate sponsor to underwrite the expenses, it will be much easier in the sense that you won't have to worry about equal corporate exposure. Usually a company will prefer to be the sole sponsor. If you do have to get more than one corporate sponsor, be careful to avoid conflicts. Don't get two companies with the same products or opposing products or services. Be careful about who your sponsors are. Obviously, you wouldn't invite a beer distributor to sponsor a conference on alcohol and drug abuse. The same thing with fitness. Think about how is it going to look when you put it before the public.

Jim Liston made a remark which I think is very important. Many times companies have to go to public relations or advertising agencies and pay a lot of money to promote their corporate products or philosophy. There is no better public relations or advertising agency than a group of volunteers who are coordinated, know what they are doing, and are enthusiastic. You have a lot of potential and I think companies recognize that.

Before you go to the sponsor, if you can, get the governor or his staff involved. That opens a lot of doors. Also list creative ideas. Don't go in to meet with the sponsor with something that they have heard a thousand times. Sponsors today are getting tired of events like walk-a-thons and jog-a-thons. A women's conference on fitness is going to be different. From the start, you have a creative idea but you have to expand on that. How are you going to get the community involved? Who will be included? Who will be invited? Are you going to invite just leaders in the community or state? Are you going to open it up to the general public? Usually the more the better.

Think about who you want to get involved, not only from the influential side or the corporate side, but from the results that will follow the workshops. Begin working on a well planned budget. The sponsor will be very interested in the type of expenses you will incur, how much money will you need for postage, followup, printing, facility rental, and speaker expenses.

Think about how you are going to involve the media. Who is going to handle the media? When you work with a corporate sponsor you are going to have to be very careful working with their name and their exposure with your event. For example, if you are going for public service time on TV, radio, or newspaper, you will not be able to include the corporate sponsors name. Some stations and publications will make exceptions but don't make any promises until you know that. You almost have to go with the idea that through press releases and media exposure there are some potential benefits for the sponsor.

Think through very carefully how that sponsor is going to benefit. Many sponsors are involved in the community and concerned with being a good public servant. But remember that all corporations are in business to make a profit. I'm not saying turn your conference or workshop into a big commercial display. Be very careful that they do receive benefits, so that something comes back to them, perhaps in an increased public awareness of the product or a better public image.

Consider the benefits to the citizens or in the eyes of the potential sponsor, the benefits to the consumer. Look at it through the eyes of the sponsor towards the consumer. What effect can this have in the community?

Once you set up the meeting with your potential sponsor, there are several things you should be aware of. Before arranging the meeting, know who you will meet. Is it the director of community relations, director of public affairs, the president or chief executive officer of the company? How do you determine who you will meet? If you know someone in the company, that helps. Don't start too low on the ladder because sometimes in an effort to shielf the final decision maker, the option never gets to him or her. When the meeting has been set, choose someone with enthusiasm to go.

Go in with confidence, don't be intimidated. You have a cause and you believe in the importance of the leadership role of women in fitness. Have a solid game plan, not only what you are going to do prior to the conference and during the conference, but also what you are going to do after the conference.

Have a well thought out budget. Don't be excessive but on the other hand, don't sell yourself short. Don't make it hard to live with. Do you go in with a Cadillac budget, Chevrolet budget, or a bicycle budget, or do you go in for what you want? Let them know what you think it is going to cost realistically. Also prepare expenses to show what will be incurred in putting on the conference.

When you involve the public, I would suggest you charge a registration fee for your event. Make it worthwhile. When people make a monetary commitment, they are going to be more interested and more involved in the followup. They are more likely to show up and be interested in what you are presenting. Even if it is just nominal, charge something.

Before you meet with your sponsor learn their business. Know what their products are, how they operate, and know who is actually involved in the management of the business. How can the company benefit? Know who their consumers are. It would not be very wise to go in and meet with Jess Bell and ask him to sponsor an all mens road race nor would it be very wise to talk to Aqua Velva about sponsoring a womens race. Think about who you are going to reach and who they want to reach. At Campbell's we are very concerned about our image among women. Find out what kind of in-house resources are available, printing, typesetting, and staff to help with secretarial duties or conference management.

Now you have the sponsor and you have the money. Involve them as much as they want to be involved. Keep the sponsor informed, perhaps a weekly letter or report or phone call. Document what you are doing. If you work well with the sponsor and the sponsor feels like it is worthwhile, you may have a sponsor for other activities.

After the event, followup with the attendees, the media and the sponsor. Don't let it end. I encourage you to followup with the people involved.

Several people have asked me about the potential role of Campbell's in state conferences. I would say that if the conference merits it, if the organization and leadership are there, there is potential of us doing the Turnaround workshop for your conference. You can get in touch with me at Campbell's Soup Company and I would be glad to give you more information.

ALICE WHEATON, Conference Coordinator: More than 85 people were involved in conducting this conference. The principal conference costs were printing, meals, speakers' accommodations, and travel. No honorariums were paid. Speakers contributed their time and expertise because they felt deeply about the subject. Preparing a synopsis or proceedings will take a big chunk out of your printing budget, but it is an effective way to extend the educational benefits of the conference and it offers exposure for the sponsor. You are going back to your states with a concept that has national impetus, and it has been reinforced by Dr. Carolyn Davis' report today that we must turn around the health and fitness of this country. We are anxious to see follow-up meetings in as many states as possible, and Glenn Swengros and I will help as much as possible in your planning.

We hope that you will put on at least a one day state meeting in cooperation with the PCPFS. It could be one day in tandem with some other event important to your state.

The key point in a women's conference on fitness is to reach the leaders in your state. The conference is not just for women. You will notice the message from the National Conference has implications for all professionals, community leaders, employers, and the family.

Invitations or a brochure outlining the program are very important. There is a definite impact when your printed materials carry the seals of your state and the PCPFS.

CLOSING STATEMENTS: Glenn V. Swengros

Jim Liston has talked to you about the make up of the governors' councils and how to approach them. Lee Dukes talked about getting corporate support. Alice Wheaton has given pointers learned in coordinating this national conference.

A program will be developed easily once you call together the key leaders in your state (e.g. the governor and his or her representatives and the appropriate professional organizations) and brainstorm this whole idea and let them know what you have experienced here in Washington.

Remember this, in your state you have all the expertise you need and enough knowledgeable people to conduct a follow-up conference on the things we have been talking about the last two days. The resources are there, what you probably don't have at the moment is the financing. But, it's out there. I hope the time we spent on it today will be helpful.

NATIONAL WOMEN'S LEADERSHIP CONFERENCE ON FITNESS ATTENDEES

Helen Adams
4722 Cresthave Blvd. #4
West Palm Beach, FL 33406

Gayle Moeller AirVita
Chief Operations Officer
P.O. Box 2055
Madison Square Station
New York, NY 10159

Tenley Albright, M.D.
2 Commonwealth Avenue
Boston, MA 02116

Ruth Alexander, Ed.D.
University of Florida
Women's Gymnasium
Gainesville, FL 32611

Linda Alexander
1714 Holly Street, NW
Washington, DC 20012

Lisa Allain
Springfield College
2011 Cumberland Drive
Woodbridge, VA 22191

Crystal Alston
National Capital YMCA
1711 Rhode Island Ave., N.W.
Washington, DC 20036

Mary Andringa
4886 S.W. 66th Street
Des Moines, IA 50321

Ellen Argenzio
Spa Lady—DC, Inc.
7620 Little River Turnpike
Annandale, VA 22003

Elizabeth Arink
936 Oakridge Avenue
State College, PA 16801

Margaret Long Arnold
AARP, Coordinator
Women's Activities
2700 Virginia Ave., N.W.
Washington, DC 20037

Mr. W. Brent Arnold
Manager, Physical Fit. & Recre.
XEROX CORPORATION
P.O. Box 2000
Leesburg, VA 22075

Mrs. William Bruce Arnold
ARCS Foundation, Inc.
3404 B Street, N.W.
Washington, DC 20007

Florence Auld
Spa Lady—DC, Inc.
7620 Little River Turnpike
Annandale, VA 22003

Denise Austin
Fitness Consultant
1237 Portner Rd.
Alexandria, VA 22314

Mrs. Anne Badham
180 Newport Center Dr.
Newport Beach, CA 92663

Davies Bahr
Penn State University
Box 312
Boalsburg, PA 16827

Alice M. Bailey
Marketing Relations Spec.
Blue Cross of Greater Philadelphia
1333 Chestnut Street
Philadelphia, PA 19107

Betty S. Baker
Professor of Health
Southeastern Louisiana University
P.O. Box 731 SLU
Hammond, LA 70402

Col. & Mrs. Thomas B. Baker
P.O. Box 187
Stevensville, MD 21666

Mrs. Gerald Baliles
Office of Gerald Baliles
Attorney General for the State
of Virginia
101 North Eighth Street
Richmond, VA 23219

Gladys M. Banker
Vice President
Women's International Bowling
Congress
P.O. Box 201
Charles Town, WV 25414

Elizabeth Barr
Department of Agriculture
USDA, FGIS, RMD Room 1648-S
1400 Independence Avenue, SW
Washington, DC 20250

Doris Barrilleaux
Chairman, Women's Committee
International Federation of Body
Builders
9417 S. Oak St.
Riverview, FL 33569

N. Denise Barrios
San Jacinto College-South
Chairperson/Phys. Ed.
13735 Beamer Road
Houston, TX 77089

Mr. John Bates
Chairman
Virginia Governor's Council on
Physical Fitness & Sports
P.O. Box 26016
Richmond, VA 23279

Karen Baum
24 Fernwood Court
Medford, NJ 08055

Terry Bazzare
Route 4 Box 174C
Chapel Hill, NC 27514

Livio Beccaccio
Unit Chief—Physical Training Unit
FBI Academy
Quantico, VA 22135

Halle Becker
Corporate Fitness Consultant
Creative Fitness Assoc.
1122 Connecticut Avenue
Washington, DC 20016

Susan Jean Becker
122 Sherman Avenue
Takoma Park, MD 20912

Mr. and Mrs. Jess Bell
Bonne Bell Company
18519 Detroit Avenue
Lakewood, OH 44170

Ruth Bender
Connecticut Governor's Committee
on Fitness
627 Country Club Road
Avon, CT 06001

Dare Bible
Tennessee State Parks
Regional Recreation Supervisor
701 Broadway
Nashville, TN 37203

Dolores Billhardt
Ohio High School Athletic Assn
4080 Roselea Place
Columbus, OH 43214

Nancy Bird, Ed. D.
National Bowling Council
Education and Training Director
1919 Pennsylvania Avenue, NW
Washington, DC 20006

Karen M. Blackwell
YMCA
3422 N. 13th Street
Arlington, VA 22201

Jane Bleggi
Recreation Therapist
Walter Reed Army Medical Center
4604 Harling Lane
Bethesda, MD 20814

Mrs. Sue Block
4902 Palisade Lane
Washington, DC 20016

Jean M. Bouton
Assoc. Professor
Towson State University
Towson Center, T.S.U.
Towson, MD 21204

Chris Branstad
2300 Grand
Des Moines, IA 50312

Karen Brelsford
Howard County Times
Columbia Flyer Bldg.
10750 Little Patuxent Parkway
Columbia, MD 21044

Laurie Brown
Instructor
Skyline Racquet & Health Club
6409 Fairmead Lane
Columbia, MD 21045

Libby Brown
National Capital YMCA
1711 Rhode Island Ave., N.W.
Washington, DC 20036

Myrtle L. Brown, Ph.D.
Virginia Polytechnic Institute
Associate Dean
Blacksburg, VA 24061

Kelly D. Brownell, Ph.D.
University of Pennsylvania
School of Medicine
133 So. 36th St.
Philadelphia, PA 19104

Juanita M. Bryant
General Federation of Women's Clubs
International President
1734 N. Street, N.W.
Washington, DC 20036

Mary Rose Bryndzia
National Capital YMCA
1711 Rhode Island Ave., N.W.
Washington, DC 20036

Jean Burkhart
California Raisin Advisory Board
Director, Consumer Services
P.O. Box 5335
Fresno, CA 93710

Frances Caldwell
The Physician & Sportsmedicine
Executive Editor
4530 West 77th Street
Minneapolis, MN 55435

Kaye Campbell
Health Promotions/Fitness Director
George Washington University
Health Plan
1229 25th St., N.W.
Washington, DC 20037

Rosemary Campbell
American Federation of Women
Bodybuilders
4312 Midhurst Lane
Chesapeake, VA 23321

Honora M. Carson
Chairperson, Utah Governor's Council
on Health & Fitness
1419 Circle Way
Salt Lake City, UT 84103

Joy B. Catlin
Procurement Agent
FHLBB
1700 G Street, N.W.
Washington, DC 20552

Susan Charles
Spa Lady—DC, Inc.
7620 Little River Turnpike
Annandale, VA 22003

Bette Charrier
Program Coordinator
George Washington University
Health Plan
1229 25th., N.W.
Washington, DC 20037

Terri L. Childers
Eductional Specialist
U.S. Army soldier Support Center
ATTN: ATSG-PF-T-D
Ft. Harrison, IN 46216

Cpt. Brenda Chewning Clark
Commander
Medical Company/MEDDAC
Ft. Belvoir
14494 Filarette St.
Dale City, VA 22193

Regina M. Clarke
Adm. Officer
Fed. Mine Saf. & Hlth Rv. Comm.
1730 K Street, N.W., 6th Floor
Washington, DC 20006

Celeste Clement
George Mason University
4400 University Drive
Fairfax, VA 22030

Carolyn Colley
Spa Lady—DC, Inc.
7620 Little River Turnpike
Annandale, VA 22003

Meryl Comer
US Chamber of Commerce
1615 H Street, NW
Washington, DC 20062

Karen Connell
Director of Corporate Relations
Executive Fitness
2336 Hunters Woods Plaza
Reston, VA 22091

C. Carson Conrad, L.H.D.
President
National Fitness Foundation
101 West Washington St., Ste. 1340E
Indianapolis, IN 46204

Elspeth Cooper
Drug Enforcement Agency
1405 Eye St., N.W.
Washington, DC 20537

Mrs. Millie Cooper
The Aerobics Center
12200 Preston Road
Dallas, TX 75230

Priscilla Cram
Program Director
Gaithersburg Parks & Recreation
31 S. Summit Avenue
Gaithersburg, MD 20877

Jeannie M. Crane, RD, MPH
Nutrition Consultant
1009½ Courtland St.
Greensboro, NC 27401

Hortense T. Criddell
Program Analyst
EEOC
2401 E Street, N.W.
Washington, DC 20507

Mr. Irv Cross
American Running & Fitness Assn.
2420 K St., N.W.
Washington, DC 20036

Carolyn Crump
ARRO
4330 East West Highway
Bethesda, MD 20814

Margaret D'Urso
Women's Council
Smithsonian Institution
NZP Office of Graphics & Exhibits
3001 Connecticut Avenue
Washington, DC 20008

Mrs. William E Dannemeyer
1032 LHOB
Washington, DC 20515

Carolyne Davis, Ph.D.
Administrator
Health Care Financing Admin.
Washington, DC 20201

Diane Davis
15606 Bradford Drive
Laurel, MD 20707

Mary E. Davis
Accounting Technician
Fed. Mine Saf. & Hlth Rv. Comm.
1730 K Street, N.W., 6th Floor
Washington, DC 20006

John H. Davis
Executive Director
NRPA
3101 Park Center Dr.
Alexandria, VA 22301

Colette de Grasse
7790 Heatherton Lane
Potomac, MD 20854

Paige de Picciotto
c/o The Fitness Studio
4900 Massachusetts Avenue, NW
Washington, DC 20016

Susan Hurley DeConcini
6014 Chesterbrook Road
McLean, VA 22101

Barbara T. Devine
Rehab, Inc.
2616 Sherwood Hall Lane, Suite 203
Alexandria, VA 22306

Deborah Digilio
Center for Health Promotion
George Mason University
Fairfax, VA 22030

Ellen Dikel
Jewish Community Center
6125 Montrose Road
Rockville, MD 20852

Sharon K. Dinkel
University of Montana
Asst. Prof./HPE Dept.
Missoula, MT 59812

Gerry P. Dixon
Secretary
Fed. Mine Saf. & Hlth Rv. Comm.
1730 K St., N.W., 6th Floor
Washington, DC 20006

Reverend Timothy Dobbins
St. John's Episcopal Church
Lafayette Square
1525 H Street, NW
Washington, DC 20005

Lisa Dobloug
Scandinavian Fitness Corp.
4000 Cathedral Ave., N.W. #355-B
Washington, DC 20016

Terese Domanski
National Capital YMCA
1711 Rhode Island Avenue, N.W.
Washington, DC 20036

Pat Doyle
National Capital YMCA
1711 Rhode Island Avenue, N.W.
Washington, DC 20036

Dr. and Mrs. Robert du Roy
Health Management Consultants, Inc.
10 Valley View
Irvine, CA 92715

Lee Dukes
Campbell's Institute for Health
and Fitness
Campbell's Place
Camden, NJ 08101

Peggy Dunlap
Hearings Clerk
Federal Mine Safety & Health
Review Commission
1730 K Street, N.W., 6th Floor
Washington, DC 20006

Mrs. David Durenberger
7732 Canal Court
McLean, VA 22102

Colleen Dwyer
North Carolina Division of
Health Services
P.O. Box 2091
Raleigh, NC 27602

Donna Ecton
Vice President
Campbell Soup Company
Campbell Place
Camden, NJ 08101

Mr. Wayne K. Edmonds
Executive Director
PA Governor's Council on
Physical Fitness & Sports
P.O. Box 90
Harrisburg, PA 17108

Dr. Marigold A. Edwards
Associate Professor
University of Pittsburgh
104 Trees Hall
Pittsburgh, PA 15261

Liz Elliott
American Running & Fitness Assn.
2420 K St., N.W.
Washington, DC 20036

Pauline E. Ellis
Occupational Health Nurse
U.S. Dept. of Labor
200 Constitution Ave., N.W. #S3214
Washington, DC 20210

Carol Eustis
Assoc. Prof.
Essex Community College
2809 Lake Avenue
Baltimore, MD 21213

Dr. Blanche Evans
Asst. Professor/Exer. Physiology
UNC Greensboro
Coleman Gym
Greensboro, NC 27412

Jennifer Evanson
1909 Spruce St.
Philadelphia, PA 19103

Marcia Fein
Association for Fitness in Business
1312 Washington Blvd.
Stamford, CT 06902

Judith Felber
National Capital YMCA
1711 Rhode Island Ave., N.W.
Washington, DC 20036

Mary Ann E. Fielder
Sports/Exercise Spec.
U.S.S.A.H. Special Services
Scott Building
Washington, DC 20317

Lynn Fischer
National Women's Health Awareness
Forum, President
1111 Arlington Blvd.
Arlington, VA 22207

Bernadette Feist Fite, Ed.D.
National Defense University
EDO, Health Fitness Professor
2-303/5902 Mt. Eagle Drive
Alexandria, VA 22303

Peggy Flemming
c/o Lee Mimms
1223¼ North Sweetzer
Los Angeles, CA 90069

Diana Flick
9204 Hidden Creek
Great Falls, VA 22066

Beth Lind Foote
Ladycom Magazine, Advertising
Administrative Assistant
1732 Wisconsin Ave., N.W.
Washington, DC 20007

Ms. Kathy Ford
Teacher Coordinator
The Aerobic Dance Company
7026 Spaniel Road
Springfield, VA 22153

Sam Fox, M.D.
Director, Cardiology Exercise Lab
Georgetown University Medical Ctr.
2415 Main Hosp.
3800 Reservoir Road
Washington, DC 20007

Ms. Marlene Fox
567 San Nicholas
Newport Beach, CA 92660

Kathy Freeman
President
Aerobic Ms. Fits
1801 S. Dairy Ashford, #113
Houston, TX 77077

Mrs. Jane C. Freeman
Girl Scouts of the USA
National President
830 Third Avenue
New York, NY 11372

Sharon Frink
Director
Catness
4200 Wisconsin Ave., N.W. #106-143
Washington, DC 20016

Dr. Sam Fuenning
Co-Chairman
Nebraska Governor's Council on
Physical Fitness & Sports
University of Nebraska
Lincoln, NE 68588

Ronda Gates
Exec. Dir., Oregon Governor's
Council on Fitness & Sports
368 S. State Street
Lake Oswego, OR 97034

Susan Gerberich
8016 Ridgeway Road
Golden Valley, MN 55426

Susan Giese
5966 Hillsboro Avenue, N.
Minneapolis, MN 55428

Sharon Golden
Tone at Home, Aerobic & Health
Instruction
3201 North 23rd Street
Arlington, VA 22201

Jane Goldening
MNA, Inc.
2427 Tunlaw Rd., N.W.
Washington, DC 20007

Linda Gordon
Glamour, Assoc. Editor
350 Madison Avenue
New York, NY 10017

Ginna Rogers Gould
660 Largo Road
Upper Marlboro, MD 20772

Cynthia J. Grassby
Nat'l Endow. for Arts
1100 Pennsylvania Avenue, N.W.
Washington, DC 20506

Shirley Gray
FWPM
Security Exchange Commission
450 5th St., N.W.
Washington, DC 20459

Reverend Henry C. Gregory
Shilo Baptist Church
1508 9th Street, NW
Washington, DC 20001

Joan Goberman
Association for Fitness in Business
Editor
705 Woodside Parkway
Silver Spring, MD 20910

Matthew Guidry, Ph.D.
PCPFS
450 5th St., N.W., Suite 7103
Washington, DC 20001

Leah B. Gunderson
Leisure & Sport for Women
1005 Kankakee
Lowell, IN 46356

Harriet Guthrie
The Aerobics Center
12200 Preston Road
Dallas, TX 75230

Cathy Hageman
Naval Medical Center
8901 Wisconsin
Bethesda, MD 20814

Rita Hains
Director
International Exercise Instructor
Association
3025 Seven Oaks Place
Falls Church, VA 22042

Ellen Hale
Gannett News Service
P.O. Box 7858
Washington, DC 20044

Dr. Richard C. Halverson, Chaplain
United States Senate
SR-227C
Washington, DC 20510

Dorothy Hamill
c/o Mr. Michael Rosenberg
MARCO, Inc.
812 N. Roxbury Drive
Beverly Hills, CA 90210

Merl T. Hannon
Chief Exercise Physiologist
Chase Manhattan Bank
1 Chase Plaza
New York, NY 10081

Kim A. Hansen
President
R. Magnus Enterprises
523 So. 26th Rd.
Arlington, VA 22202

Ruth R. Harkin
1900 Ancilla Court
Alexandria, VA 22307

Dorothy V. Harris
Board of Trustees
Women's Sports Foundation
235 Circle Drive
State College, PA 16801

Dr. Victoria L. Harris
1599 Springfield Highway
Goodlettsville, TN 37072

Mrs. Willard V. Harris
President
Ridgewood Development
151 Kalmus J5
Costa Mesa, CA 92662

Mr. William Haskell
President
American College of Sports Medicine
730 Welch Road
Palo Alto, CA

Donna Haverstock
Mgr., Consumer Nutrition Ctr.
Campbell Soup Co.
Campbell Place
Camden, NJ 08101

Ash E. Hayes, Ed.D.
PCPFS
450 5th St., N.W., Suite 7103
Washington, DC 20001

Mrs. Juanita Hayes
5902 Skyline Heights Court
Alexandria, VA 22311

Gloria Heer
Commissioner
Los Angeles County Park &
Recreation Commission
10257 Rives Avenue
Downey, CA 90241

Mrs. William Hefner
1205 Balls Hill Road
McLean, VA 22101

Gloria Henson
AAU
3400 W. 86th Street
Indianapolis, IN 46268

Victor Herbert, M.D., JD
VA Medical Center—Bronx
Director, Hematology & Nut. Lab.
130 W. Kingsbridge Road
Bronx, NY 10468

Robin Hertz
4977 Battery Lane #177N
Bethesda, MD 20814

Levern Hicks
Fed. Mine Saf. & Hlth Rv. Comm.
1730 K Street, N.W., 6th Floor
Washington, DC 20006

Steven and Carol Hittner
The Golden Years
P.O. Box 537
Melbourne, FL 32901

Dr. Patricia Hogan
YWCA of the U.S.A.
135 W. 50th St.
New York, NY 10020

Lt. Col. Micki King Hogue
Department of Athletics
US Air Force Academy
Colorado Springs, CO 80840

John Holland, P.E.D.
Executive Development Office
National Defense University
Fort McNair
Washington, DC 20319

Jana Holland
Spa Landy—DC, Inc.
7620 Little River Turnpike
Annandale, VA 22003

Marcia Holman
Rodale Press, Women's Health Newsl
Managing Editor
33 E. Minor Street
Emmaus, PA 18049

M. Patricia Holmes
Office of Recreational Sports
Miami University
Oxford, OH 45056

Ann M. Hoopes
Health Editor
Walkways Magazine
5039 Lowell Street
Washington, DC 20016

Mrs. Craig Hosmer
5024 Van Ness St., NW
Washington, DC 20016

Diane Houff
President
Executive Fitness
2336 Hunters Woods Plaza
Reston, VA 22091

Frances Howley
4808 Aldrich Avenue, South
Minneapolis, MN 55409

Janice Hunter
Employee Relations Specialist
US Nuclear Regulatory Commission
Washington, DC 20555

Patricia Hurley
Coordinator
Shaklee Corp.
35 Jennie Lane
Westport, CT 06880

Debra Hutchinson
Asst. Prof.
Essex Community College
325 Jennie Lane
Pasadena, MD 21120

Mr. and Mrs. William E. Jackson
Living Concepts, Inc.
6033 Ridge Ford Drive
Burke, VA 22015

Mary C. Jarratt
USDA, Assistant Secretary for Food
and Consumer Services
14th & Independence Ave., S.W.
Washington, DC 20250

Marlene Johnson
Lieutenant Governor of the State
of Minnesota
122 State Capitol
St. Paul, MN 55155

Melissa Johnson
National Capital YMCA
1711 Rhode Island Ave., N.W.
Washington, DC 20036

Kay Lani Johnson
Colorado Governor's Council
4200 East 9th Avenue
Denver, CO 80262

Mary Jo Johnson
7101 North First Street
Phoenix, AZ 85020

Karen M. Jones
Ladycom Magazine, Asst. Editor
1732 Wisconsin Ave., N.W.
Washington, DC 20007

Mrs. Herbert Jordan
Director
AMA Auxiliary
24 E. Gate Drive
Camp Hill, PA 17011

Sally Junker
Personnel Manager
Boise Cascade
P.O. Box 2885
Portland, OR 97208

Lisa Kanner
Information Specialist
PCPFS
450 5th St., N.W., Suite 7103
Washington, DC 20001

Robert Karch, Ed.D.
National Center for Health/Fitness
American University
3700 Nebraska Avenue, NW
Washington, DC 20016

Richard O. Keelor, Ph.D.
President and CEO
Living Well of America
111 North Post Oak Lane
Houston, TX 77024

Jo Kent
Spa Lady—DC, Inc.
7620 Little River Turnpike
Annandale, VA 22003

Ms. Kim Kevern
Director of Personnel
The Aerobic Dance Company
11320 Robert Carter Road
Fairfax Station, VA 22039

Nance Kirk
Director of Special Projects
National Roller Skating Assn.
P.O. Box 81846
Lincoln, NB 68501

Tom Klein
c/o Teri Domanski
National Capital YMCA
1711 Rhode Island Avenue, NW
Washington, DC 20036

Anne Klink
c/o Dr. Sam Fuenning
Nebraska Governors Council on
Physical Fitness & Sports
University of Nebraska
Lincoln, NE 68588

Dennis Kowal, Ph.D.
40916 Gallows Road
Annandale, VA 22003

Carol Krucoff
Washington Post
1150 15th St., N.W.
Washington, DC 20071

LCdr. Steven R. Lamar, Ph.D.
Director, Dietetics
Naval Medical Center
Bethesda, MD 20814

Lawrence E. Lamb, M.D.
135 Downing Drive
San Antonio, TX 78209

Alice Landon
c/o Dorothy Langkop
5350 Wateka Drive
Dallas, TX 75209

Dorothy Langkop
5350 Wateka Drive
Dallas, TX 75209

Marianthi Lansdale
Marina Pacifica Oil Co.
P.O. Box 27
Seal Beach, CA 90740

Diane Wilcox Lawrence
Rehab, Inc.
2616 Sherwood Hall Lane, Suite 203
Alexandria, VA 22306

Donna S. Lee
Administrative Assistant
National Fitness Foundation
101 W. Washington, St., Suite 1340E
Indianapolis, IN 46204

Prof. Heinz W. Lenz
Maryland Commission of Physical
Fitness
U.S. Naval Academy, P.E. Dept.
Annapolis, MD

Marilea G. Levinson
2207 Aspen Place
Richmond, VA 23233

Mrs. Lynn Levvis
Director, Dance Training
The Aerobic Dance Training
5354 Guinea Road
Fairfax, VA 22032

Mrs. Glenard P. Lipscomb
5810 Osceola Road
Bethesda, MD 20816

Jim Liston
Illinois Governor's Council on
Physical Fitness and Sports
525 W. Jefferson Street
Springifled, IL 62706

Karen Loose
Coordinator, Wellness Program
Los Alamos Laboratory
Mail Stop P955
Los Alamos, NM 87545

Mr. Cliff Lothery
YMCA of the U.S.A.
Associate Director, Health/Phys. Ed
101 N. Wacker Drive
Chicago, Il 60606

Angela Lumpkin
Department of Physical Education
Fetzer Gymnasium 468A
University of North Carolina
Chapel Hill, NC 27514

Judy Mahle Lutter
Melpomene Institute, President
1897 Summit
St. Paul, MN 55105

Christine MacIntyre
SHAPE, Editor in Chief
21100 Erwin Street
Woodland Hills, CA 91367

Pamela Macker
Skyline Racquet & Health Club
P.O. Box 30254
Washington, DC 20007

Dianne Males
Redbook, Health Columnist
6616 River Trail Court
Bethesda, MD 20817

Beverly Malin
1127 Briarcliff
Spicewood, TX 78669

Audrey F. Manley, M.D.
Assoc. Adm. for Clinical Affairs
DHHS/PHS/HRSA
5600 Fishers Lane
Rockville, MD 20857

Frances Marrs
2367 N.W. Johnson Street
Portland, OR 97210

Debbie Martin
Admin. Asst.
Illinois Governor's Council on
Health & Physical Fitness
525 W. Jefferson
Springfield, IL 62706

Suzanne Mayer
Minnesota Council on Health
1645 Hennepin Suite 222
Minneapolis, MN 55403

Charlene Gaylord McCoy
WRC NBC
4001 Nebraska Avenue, NW
Washington, DC 20016

Nancy McDade
916 Cameron Street
Alexandria, VA 22314

Pat McKenney
President
Somebodies, Inc.
1070 Thomas Jefferson
Washington, DC 20007

Jo McLaughlin
Howard County Recreation & Parks
3430 Court House Drive
Ellicott City, MD 21043

Lauve Metcalfe
Director, Program Development
Campbell's Institute for Health
and Fitness
Campbell Place
Camden, NJ 08101

Mr. and Mrs. S. N. Metcalfe
4910 Round Hill Road
Frederick, MD 21701

Anne Michaels
MNA
2427 Tunlaw Road
Washington, DC 20007

Shari Miller
Vogue, Fitness & Beauty Writer
350 Madison Avenue
New York, NY 10017

Madeline Manning Mims
Madeline Manning Mims Ministries
P.O. Box 902010
Tulsa, OK 74136

Mr. Doug Minor
Mississippi Governor's Council on
Physical Fitness & Sports
P.O. Box 570
Jefferson City, MS 65102

Mr. Peter A. Mnatzakanian
8848 Stonebrook Lane
Columbia, MD 21046

Gayle Moeller
128 E. 16th Street
New York, NY 10003

Leslie C. Montgomery
Researcher
National Defense University
Ft. McNair, NDU-EDO
Washington, DC 20319

Karen Murphy
The Wellness Council of the
Midlands
1301 Harney Street
Omaha, NE 68102

Marjorie M. Murphy
National Director Aquatic Programs
YMCA of the USA
101 No. Wacker Drive
Chicago, IL 60606

Anice Nelson
Employ. Health Services
OPM/WED/OPERM/EHSB
1900 E St., N.W.
Washington, DC 20415

Sally C. Nevius
2912 Garfield Terrace
Washington, DC 20008

Robert Nirschl, M.D.
North Building
3801 N. Fairfax Drive
Arlington, VA 22203

Dr. & Mrs. S. R. Nord
1414 Dover Drive
Newport Beach, CA 92660

Dr. S. R. Nord, Jr.
1414 Dover Drive
Newport Beach, CA 92660

Linda Norton
Mont. Co. Parks & Rec.
10403 Proctor St.
Silver Spring, MD 20901

Martha Nudel
Director of Communications
National Recreation and Parks Assc.
3101 Park Center Drive
Alexandria, VA 22301

Colleen Nunn
6852 Tulip Hill Terrace
Bethesda, MD 20816

Lacey O'Neal
4209 Blaine Street, N.W.
Washington, DC 20019

Janet O'Tradovec
Maryland Commission on Physical Fitness
201 W. Preston St.
Baltimore, MD 21201

Valeria M. Ogden
YWCA, Executive Director
624 9th St.
Washington, DC 20001

Erminia Olivas
Los Alamos Nat'l Laboratory
Club 1663 Board Member, M/S P20
P.O. Box 1663
Los Alamos, NM 87545

York E. Onnen
Director of Program Development
G2
450 5th St., N.W. Suite 7103
Washington, DC 20001

Jerome and Maureen Osborne
JTO, Inc.
9260 Progress Parkway
Mentor, OH 44060

Barbara Palmer
Director of Women's Athletics
Florida State University
100 Tully Gym
Tallahassee, FL 32306

Shirley Y. Pate
253A G St., S.W.
Washington, DC 20024

Mrs. Jerry Patterson
4411 Ossian Hall Lane
Annandale, VA 22003

Margaret A. Payne
Assistant Commissioner
NYS Off. Parks, Rec. & Hist. Pres.
Agency Bldg. #1
Empire State Plaza
Albany, NY 12238

Driana Davies Pearce
Program Admin.
Executive Fitness
2336 Hunters Woods Plaza
Reston, VA 22091

Ade Pena
6620 River Trail Court
Bethesda, MD 20817

Barry Peoples
811 Quince Orchard Blvd. #22
Gaithersburg, MD 20878

Emma J. Perry
PCPFS
450 5th St., N.W., Suite 7103
Washington, DC 20001

Sharon Plowman, Ph.D.
Northern Illinois University
Department of Physical Education
DeKalb, IL 60115

Mrs. Lorraine D. Polk
4404 Highboro Drive
Mt. Airy, MD 21771

Pamela Poole
20 N. Darlington Street
West Chester, PA 19380

Christine Preziotti
Phi Epsilon Kappa Fraternity
320 Freeman Hall
Montclair State College
Upper Montclair, NJ 07043

Mrs. Melvin Price
6378 Lakeview Drive
Falls Church, VA 22041

Nina Prunka
3213 North 23rd Street
Arlington, VA 22201

Karen Purcell
Executive Fitness, Inc.
2336 Hunters Woods Plaza
Reston, VA 22091

Sarah Purcell
c/o Real People
George Schlatter Productions
8321 Beverly Boulevard
Los Angeles, CA 90048

Margaret Radke
3060 Islandview Drive
Mound, MN 55364

Linda Radovich
Mutual Broadcasting System, Dir. Press Representatives
1755 S. Jefferson Davis Hwy.
Arlington, VA 22202

Suzanne Rainville
310 Aspen Street
Alexandria, VA 22305

Donna Reams
Vice President
Executive Fitness
2336 Hunters Woods Plaza
Reston, VA 22091

Guy Reiff, Ph.D.
Department of Physical Education
University of Michigan
401 Wastenaw Avenue
Ann Arbor, MI 48109

Diane Cushman Richards
2016 Yorkshire
St. Paul, MN 55116

Kay Riggins
Region Director of Sports/Fitness
Houston Center Club
1100 Caroline
Houston, TX 77002

Cleo V. Robinson-Anderson
Coordinator
Health Alternatives International
Riverside Presbyterian Tower
23rd & Race Sts., #800
Philadelphia, PA 19103

Laurie Roman
c/o Teri Domanski
National Capital YMCA
1711 Rhode Island Avenue, NW
Washington, DC 20036

Johanna H. Roth, R.D.
Consulting Nutritionist and Dietician
7520 Hampden Lane
Bethesda, MD 20814

Karen Rothman
Karenastics
11209 Fall River Court
Potomac, MD 20854

Henley F. Roughton
Washington Runhers Unltd.
8208 E. Boulevard Drive
Alexandria, VA 22308

Phyllis Rubin
13 Lighthouse Road
Great Neck, NY 11024

Carolyn Ruos
7145 Deer Valley Road
Highland, MD 20777

Allan J. Ryan, M.D.
The Physician and Sportsmedicine
Editor-in-Chief
4530 W. 77th St.
Edina, MN 53435

Lorene Sabatino
Mutual Broadcasting System
Press Rep.
1755 S. Jefferson Davis Hwy.
Arlington, VA 22202

Mrs. James Schlesinger
3601 N. 26th Street
Arlington, VA 22207

Maxine Schmidt
2234A 36th Street
Los Alamos, NM 87544

Doris M. Schmidt
Pepperidge Farm/Campbell Soup
9 Rainey Lane
Westport, CT 06880

LTC David Schnakenberg, USA
Office of the Asst. Surgeon Gen. for Research & Development
DASG-RDZ
Washington, DC 20310

Anne L. (Nancy) Schulze
DACOWITS, Chairman
5702 Cricket Place
McLean, VA 22101

Cory SerVaas, M.D.
Editor and Publisher
The Saturday Evening Post
2525 West 44th Street
Indianapolis, MN 46028

Phyllis Sharlin
10805 Kirkdall Lane
Potomac, MD 20854

Wilfred Michael Shea
North Carolina State University
Carmichael Gym
Raleigh, NC 27607

Ms. Eileen Shilesky
The Aerobic Dance Company
10403 Pearl Street
Fairfax, VA 22032

Dr. Lois Shofer
Maryland Commission on Physical Fitness
201 W. Preston Street
Baltimore, MD 21201

Artemis P. Simopoulos, M.D.
Chairman
Nutrition Coordinating Committee
National Institutes of Health
4B-59 Bldg. 31, NIH
Bethesda, MD 20205

Ms. Pat Skelding
Assistant Director
The Aerobic Dance Company
7755 Carrleigh Parkway
Springfield, VA 22152

Eugene Skora
Executive Director
National Senior Sports Association
317 Cameron Street
Alexandria, VA 22314

Everett L. Smith, Ph.D.
University of Wisconsin-Madison
504 N. Walnut
Madison, WI 53705

Mrs. Jack P. Smith
6827 Cliffbrook
Dallas, TX 75240

Chris Spain
PCPFS
450 5th St., N.W., Suite 7103
Washington, DC 20001

Dr. Carolyn D. Spears
209 Iris Drive
Pineville, LA 71360

JanaLee Sponberg
DOD Dependent Schools
5705 Indian Court #2B
Alexandria, Va 71360

Debra Squire, M.D.
Duke University Medical Center
Division of General Pediatrics
Durham, NC 27710

Rebecca Stafford, Ph.D.
Chatham College, President
Woodland Road
Pittsburgh, PA 15232

Linda Staiger, M.D.
Orthopedic Surgeon
45 Castro Street
San Francisco, CA 94114

Mrs. John William Stanton
3041 West Keys Lane
Washington, DC 20007

Andria B. Starks
Chief Nurse Consultant
HRSA/BHCDA
5600 Fishers Lane
Rockville, MD 20857

Connie Stewart
Stewardship, Inc.
100 First Avenue Building #236
Rochester, MN 55902

Jane K. Stewart
Executive Director
The Rutherford House
3300 Parkview Lane
Harrisburg, PA 17111

Jessie E. Stoner
Florida Junior College
3917 Eunice Rd.
Jacksonville Beach, FL 32250

Barbara Stover
2444 39th Place, NW
Washington, DC 20007

Joan Sullivan
Department of Physical Eduction
Portland Community College
Portland, OR 97219

Joan M. Sullivan
NBS
NBS Bldg. 225, Rm. A265
Washington, DC 20234

Glen V. Swengros
Director of State-Federal Relations
PCPFS
450 5th St., N.W., Suite 7103
Washington, DC 20001

Kathrine Switzer
Director, Sports Programs
Avon Products, Inc.
9 W. 57th Street
New York, NY 10019

Deborah Szekely
Founder/President
Golden Door, Inc.
3085 Reynard Way
San Diego, CA 92103

Karyn Tarter
US Weightlifting Federation
Women's Committee
55 North Avenue
New Rochelle, NY 10805

Agnes M. Taylor
Vice Chairman
Maryland Commission on Physical Fitness
201 W. Preston Street
Baltimore, MD 21201

Denise Terry
Somebodies, Inc.
1070 Thomas Jefferson
Washington, DC 20007

Edwyna Testerman
218 Oakleaf
Lafayette, LA 70503

Carol E. Tetu
Runhers
2008 Westfield Street
Alexandria, VA 22308

Jacqueline Thompson
Westland Intermediate School
5511 Massachusetts Avenue
Bethesda, MD 20816

John Thompson
Downtown Canton YMCA
405 Second Street, NW
Canton, OH 44702

Sue Thompson
George Mason University
4400 University Drive
Fairfax, VA 22030

Kit Tomasi
Associate Director
Minnesota Sports Festival
1887 Lincoln Avenue
St. Paul, MN 55105

Kim Troast
Treasurer
Phi Epsilon Kappa Fraternity
615 Highland Avenue
Little Falls, NJ 07424

Miss Sissie Twiggs
The Fitness Studio
4900 Massachusetts Avenue, N.W.
Washington, DC 20016

Linda Vanderhoff
Executive Director
Maryland Commission on Physical Fitness
201 W. Preston St.
Baltimore, MD 21201

Lauren Vanderveen
Somebodies, Inc.
1070 Thomas Jefferson
Washington, DC 20007

Joe Ann Vickers
Director
The Aerobic Dance Company
3424 Woodburn Road
Annandale, VA 22003

Janet Vizard
Recreation and Welfare Association
National Institutes of Health
9000 Wisconsin Avenue
Bethesda, MD 20205

Mary Vlamides
7151 Brookcove
Dallas, TX 75214

Mrs. Wendie S. Watson
PCPFS
450 5th St., N.W., Suite 7103
Washington, DC 20001

Mrs. Wendie S. Watson
PCPFS
450 5th St., N.W., Suite 7103
Washington, DC 20001

Carolyn Weber
Physical Training Unit
FBI Academy
Quantico, VA 22135

Lynne A. Weise
Health Educator
United Health Maintenance
9017 Red Branch Road
Columbia, MD 21045

Mrs. Marlene Welton
Health Resources Group
17941 Brookshire Lane
Huntington Beach, CA 92647

Wayne Weston
Director
Orange County Recreation and Parks
300 West Tryan Street
Hillsborough, NC 27278

Mrs. Alice Wheaton
Conference Coordinator
PCPFS
450 5th St., N.W., Suite 7103
Washington, DC 20001

Willye White
7221 S. Calumet
Chicago, IL 60619

Martha Wickenden
Research Coordinator
United States Tennis Association
Education & Research Center
729 Alexander Road
Princeton, NJ 08540

Honorable Harriett Wieder
Chairman of the Board of Supervisor
County of Orange
#10 Civic Center Plaza
Santa Ana, CA 92702

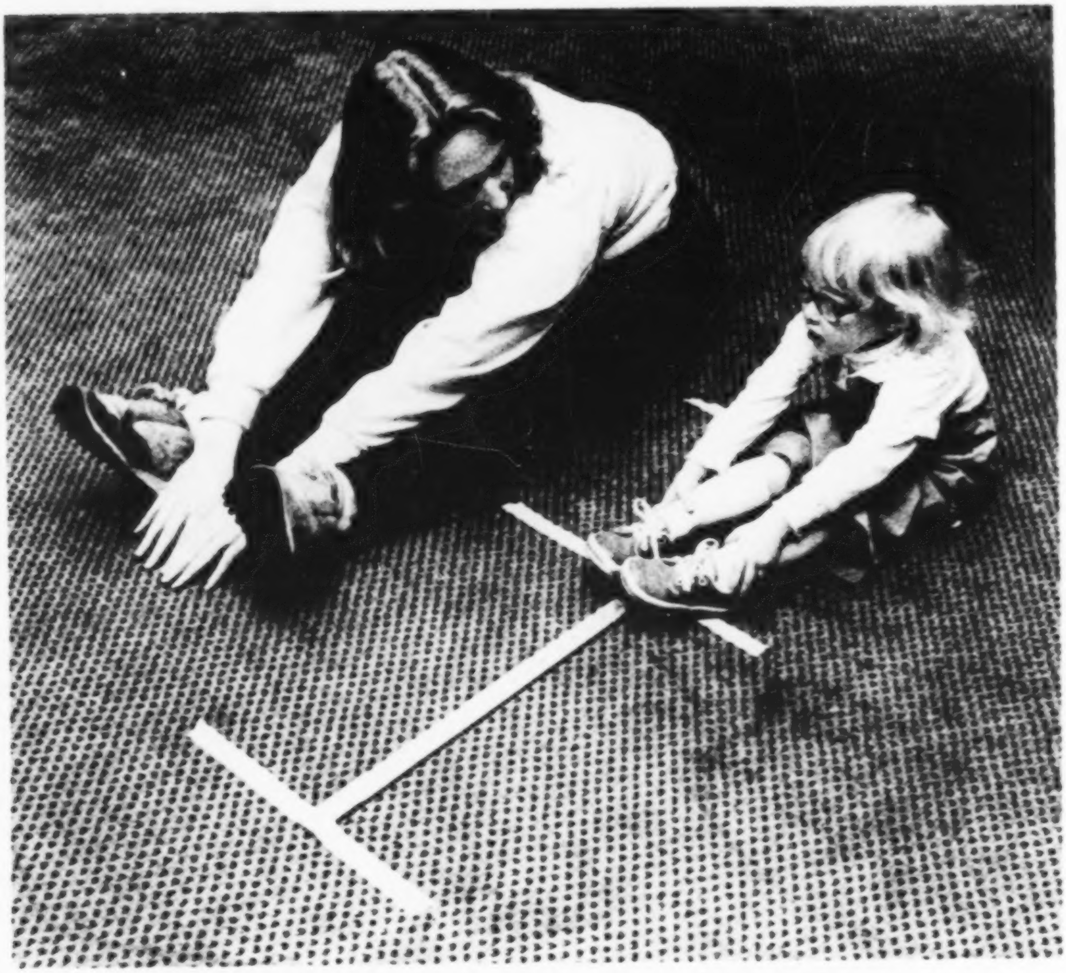
Don Williamson
Naval Medical Center
8901 Wisconsin
Bethesda, MD 20814

Barbara Winkler
Service Director
Family Circle
488 Madison Avenue
New York, NY 10022

Leah Wollenburg
Women's Intercollegiate Athletics
University of Minnesota
238 BFAB
516 15th Avenue, SE
Minneapolis, MN 55455

Scott Wood, Ph.D.
Iowa Governor's Council on Physical
Fitness and Sports
Department of Psychology
Drake University
Des Moines, IA 50322

Adrien Zubrin
1880 Columbia Road #405
Washington, DC 20009



The President's Council
on
Physical Fitness & Sports

450 Fifth Street, N.W.
Suite 7103
Washington, D.C. 20001

202-272-2018